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THE JOURNAL OF GEOGRAPHY

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The JOURNAL of GEOGRAPHY

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VOLUME XLVII

JANUARY, 1948

NUMBER 1

FACTORS RELATIVE TO SETTLEMENT IN THE COLUMBIA BASIN RECLAMATION PROJECT

CHESTER F. COLE

University of Nebraska

The Columbia Basin Reclamation Project is located, approximately in the south central part of the State of Washington, in the big bend of the Columbia River, and is roughly 60 miles east to west and 85 miles north to south. The irrigable area begins some 50 miles from the well-known Coulee Dam. The project lies within a 2,500,000 acre expanse, of which 1,029,000 have been classified as arable. The irrigation system, now under construction, is designed to serve this area of more than 1,000,000 acres. Coulee Dam, upon which construction began in 1933 is the key to irrigation of the area.

The maximum flow of the Columbia, which continues thru the summer months, assures water availability during the growing season. At Coulee Dam the water will be lifted from Lake Roosevelt, the 151 mile waterway formed by the Grand Coulee Dam, into the equalizing reservoir, which will be a new reservoir created in the Upper Grand Coulee,—the abandoned, ice-age bed of the Columbia. Two new earth-rock dams, 27 miles apart, will block the ends of the upper Grand Coulee to impound the water in the equalizing reservoir. Ordinarily pumping from Lake Roosevelt to the reservoir will be against a 280 ft. head—a full lake to a full reservoir. From the new equalizing reservoir irrigation water will flow thru 4,000 miles of canals, siphons, tunnels and other distributing structures to reach 12,000 to 15,000 family-size farm units.

At the present time construction is progressing, but undoubtedly it will be 25 to 50 years before the project is completed and settled, depending upon need, Congressional appropriations, governmental regulations, availability of labor and materials, and availability of settlers. Coulee Dam, itself, for all practical purposes has

been completed. Construction is progressing slowly on the pumping plant. The first pump is to be installed sometime in 1948. It will be about four or five years, before irrigation water, pumped from Lake Roosevelt, will be available for the first land in the basin. It is planned, however, that an auxiliary pumping plant, about

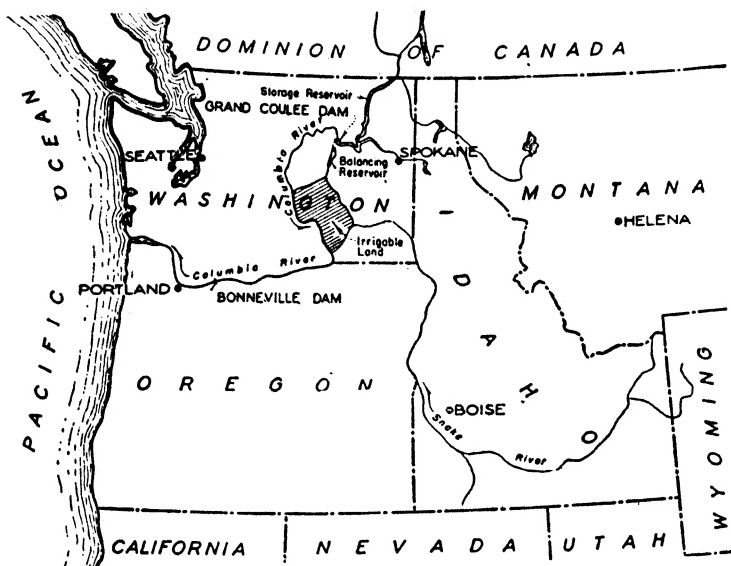


Fig. 1. Location of Grand Coulee Project.

twelve miles northwest of Pasco, near the southerly end of the project, will be serving 5,400 acres with irrigation water in 1947-48.

Construction has begun on the 10,000-foot South Dam, which will block the south end of the upper Grand Coulee, and contracts have been granted for building the Long Lake Dam and the 3½-mile Potholes Dam. The Potholes Dam, fourth largest in the nation, will cost \$9,000,000. The Potholes Reservoir will capture seepage and return flow, thus keeping pumping costs at Coulee Dam to a minimum. This reservoir will be capable of serving 270,000 acres.

In the Columbia basin project we have the world's largest concrete dam, potentially one of the world's largest irrigation projects, and potentially the world's largest hydro-electric plant. It goes, almost without saying, that to make such an irrigation project economical to the operators of small farms, subsidy of some

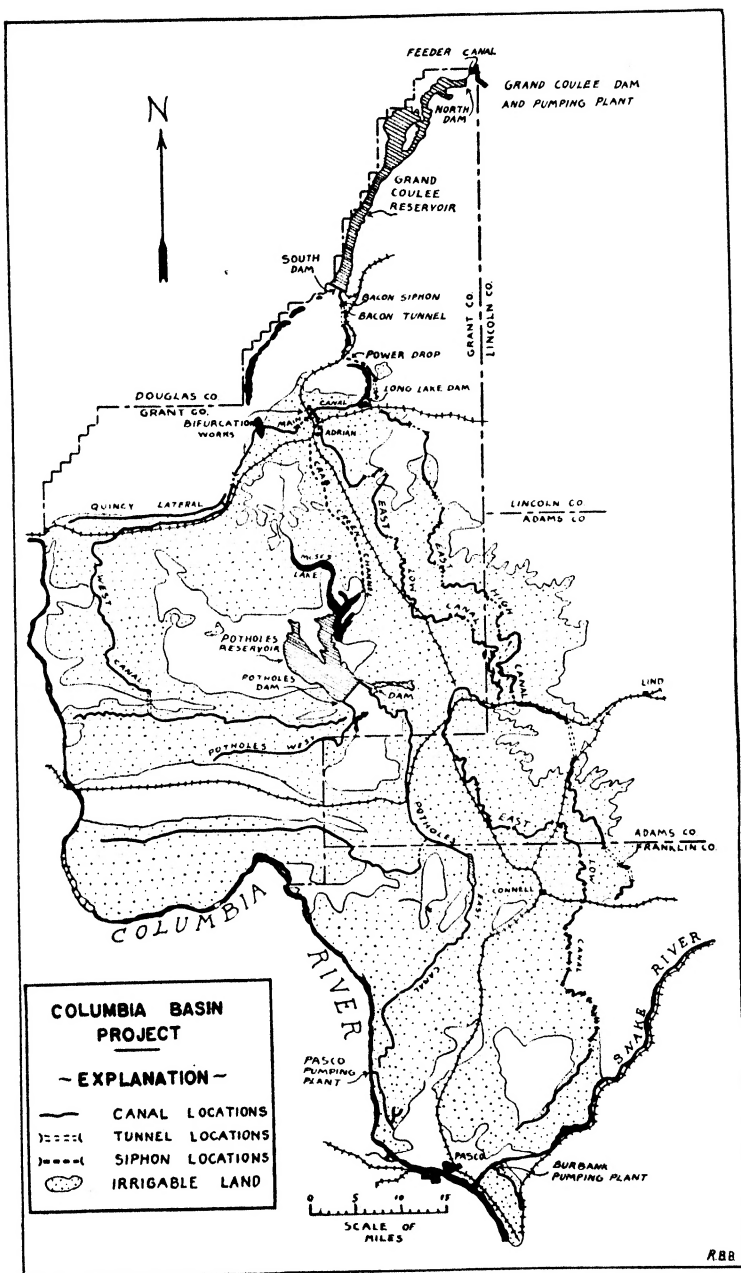


Fig. 2. Map of the Columbia Basin Project.

type is necessary. In this case agriculture will be subsidized by the sale of power.

Characteristics of the natural landscape are favorable for success of the project. The elevation ranges from over 1,500 feet above sea level at the northern edge of the project to 500 feet above sea level at the junction of the Columbia and Snake rivers, thus, gravity flow is permitted from the equalizing reservoir—elevation 1,570 ft.—thruout the project. Nearly $1\frac{1}{2}$ million acres in the basin will not receive water due to poor soil, steep slope, altitude, poor drainage, etc.

The soils within the project vary widely—from deep, fine loess and alluvial deposits of good quality to coarse sterile sand. The loess material to be irrigated is confined to a narrow strip along the eastern fringe and a small section in the northwest corner. Most of the irrigable soils, however, are alluvial deposits with depth in excess of 12 inches but usually less than 48 inches. The maximum allowable slope is 15 per cent and this only where all other conditions are highly favorable. Where serious drainage difficulties might develop, the soils have been classified as nonarable.

Climate decreed long ago that dry farming was doomed to failure in most of the Columbia Basin. There have been fine crops of dry-land wheat raised in the Grand Coulee itself, as there have in the Quincy and other areas; but these were grown during years of better than average rainfall. There have been no prolonged periods of relief from drought. Average yearly percipitation varies from less than 6 inches in the southwestern part of the area to $9\frac{1}{2}$ inches on the northeast uplands, and little of this rainfall comes during the growing season. Temperatures include a January average minimum of 20° Fahrenheit and a July average maximum of 91° . The most significant difference in climatic conditions between areas of the basin is found in the average length of time between killing frosts. In the northeast this period is from 135 to 150 days while on the lower south facing slopes this period is 175 to 190 days.

Soil examination has been thorough. At least one pit 5 ft. deep was dug on each forty acres. Soil texture, soil depth, alkali concentration, stoniness, angle of slope, surface in relation to grading problems, and drainage were all considered in classifying the soils. Soil classification was necessary to determine best land use and to determine the proper allocation of water and construction charges.

Soil was classified according to the aforementioned standards. In general, Class I land was taken as sandy loam to friable clay loam of 30 or more inches in depth before encountering sand, gravel or cobble; other depth characteristics; no rock in plow zone; slope up to 5 per cent and leveling to be accomplished with a float; no drainage problem to be encountered. Class II and Class III are based on deficiencies of one or more of the above. The difference between these two latter classes is usually one of degree.

It is readily understood, that in this semi-arid country, the soil is low in active organic matter and available nitrogen; hence, in considering the crop pattern for the land, thought must be given to crops which are soil building and soil holding. In irrigable land of the type under discussion, organic matter is important not only in providing plant food, but also because of its function in increasing the water absorption and retention qualities of the land. During the early years of cropping natural deficiency in organic material requires that attention be paid to the leguminous and grass crops.

It is anticipated that the general agricultural pattern will consist of various amounts of cash field crops, as sugar beets, potatoes, and livestock enterprises. The higher the productivity of the land, the greater the emphasis on cash field crops will be; the lower the productivity of the land, the greater the emphasis on forage crops, livestock production, and associated grass crops. In a very few areas vegetable and fruit farming can be a part of the farm pattern. In no case is complete specialization of truck or fruit farming recommended.

The method or methods by which settlers will be chosen has not been determined finally as yet. Veterans' priorities must be worked out as well as general settlement qualifications. Settlement qualifications, of necessity, must be set up; for, certainly a farmer's chance of success is enhanced if he has some net worth when first occupying the land. Studies will determine these policies, probably within the near future.

Settlement in the Columbia Basin Reclamation Project will be accomplished under the Columbia Basin Anti-land Speculation Act of 1937 and the Columbia Basin Project Act of 1943. The 1937 law provided that the land be appraised at its dry land value—which was done and values established ranging from approximately \$3 to \$30 per acre. By law, a settler need not pay more than the appraised dry-land value. The 1937 law also provided that a man

and wife could own only 80 acres together or forty acres for each, regardless of soil characteristics and other conditions. Studies made indicated that this method might not result in the most efficient land and water use, and in some cases it would not provide a suitable standard of living for a farm family. The law of 1943 changes this and provides that the land will be divided into farm units of such size as will support an average-size family at a suitable standard of living. The maximum amount of irrigated land to be owned by one family (which includes the man, wife, and children under 18 years of age) may not exceed 160 acres. Farms must conform to approved farm-unit patterns. Water will not be supplied to more than one farm unit held by any one landowner except where ownership remains the same as prior to 1937. These owners can retain up to a maximum of 160 irrigable acres as their entire farmstead, altho the area actually may consist of more than one family-size unit. In no event can a man receive water for more than 160 acres.

Farm units for persons who acquire land in the Basin subsequent to 1937 will, on the average, be considerably smaller than 160 acres. Investigations have been made as to farm size and unit types. Some of the units will be set up on the plan of rectangular subdivision; and where topographic characteristics warrant, they will be based on a contour division. Most efficient land and water use will determine the method to be employed in a given locality.

Farm size recommendations were based on the previously mentioned soil classification. The investigators recommended that for Class I land farm sizes be between 45 and 65 acres; for Class II farm sizes be between 50 and 110 acres depending upon characteristics of soil and topography; Class III farm sizes be between 110 and 160 acres. Since few, if any, farms will be of one land classification, farms will be smaller than 160 acres; size will be determined by a method of prorating acreage according to the various land classifications contained within the farm unit.

Ownership does not preclude the individual farmer leasing available land. It is desirable that the incentive for capital expansion be present; this is cared for by the lease provision.

The cost of water, the cost of bringing the water to the individual farm units is an expense, that with the original cost of the land and the cost of preparation for tillage must be added to the list of expected expenses which the prospective farmer must be prepared to meet.

Water will be allotted to land on the basis of a water duty classification of four divisions. These classifications are based on the ability of the land to produce and upon the need of the land for crop types based on this ability. It has been recommended that water be allotted on a basis less than that required for maximum production but sufficient to prevent crop failure with efficient use. If the farmer, however, desires more water, it can be obtained for a small additional charge. Successively higher charges will be assessed for abnormally high demands so that wastage of water will be discouraged. At present it has been recommended that the water allotment be between 3.25 acre feet to 5.00 acre feet, depending upon the water use classification—actually, an average of 3.664 acre feet. It is estimated that the charges for operating and maintaining the irrigation system will average \$2.60 per acre per year. Added to this will be the construction-cost charge, which is expected to average \$2.13 per acre per year.

Construction charges are to be prorated by productive capacity of the lands. This charge averages \$85 per acre, and would be considerably higher if it were not for the fact that more than three-fourths of the actual construction costs are to be met by the sale of power generated at Grand Coulee Dam. Repayment of this charge is to be spread over a period of 40 years, there being no payment of this sort due during a development period—the first ten years after water becomes available to a particular block of land. Payments during the next 40 years, following the development period will be interest free.

In effect, the construction charge is the chief item in the cost of the land. Cost for preparing land for cultivation will depend upon such variables as slope of land, the amount of sage brush clearing necessary, difficulty in preparing ditches, availability of materials and labor, including labor within the family. This cost may have as wide a variation as from \$10 to \$45 per acre. Along with these variables are such considerations as the cooperative use of heavy farm equipment, cooperative systems of domestic water supply, etc.

The question that very definitely is not settled is the type and possibility of cooperative communities. Certainly, there may be savings by cooperative buying and selling. It is also possible that this pattern of life can be expanded into the cooperative community instead of the widely spread, highly individualized farm units.

The Columbia basin project offers aggressive, farm-loving people with limited means a chance to establish and maintain their own homes and to earn a steady living by tilling the soil. Such settlers will have the benefit of the most comprehensive investigations ever made on an irrigation project. The government will have provided much in the way of information, physical structures, scientific aids, and competent guidance; yet, the first few years will be hard. It will be a type of pioneering, but those with ambition, and intelligence, can be successful and provide all of the necessities and some of the luxuries for themselves and their families.

HIGH SCHOOL GEOGRAPHY IN NEBRASKA

REX C. MILLER

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In contrast to a decade ago, when many geographers were busy giving reasons why geography should be added to the high school curriculum, today, many geographers are concerned about the way geography is being offered in the curriculum and what can be done to improve the instruction of the subject. Papers on the status of geography in various states have been presented in the past, to this list may now be added Nebraska.

Geography today has become more than a few facts and places to be presented and learned in the classroom and later to be forgotten. It now enters into our every day life to such an extent that we can not forget it—the radio, the newspaper and daily conversation hinge to geography directly or indirectly.

One can safely say that World War II did much to bring about this change. Before 1941 the man on the street generally knew a few geographical facts concerning his immediate environment but there his geographical thinking usually stopped. At the outbreak of the war and during the months which followed, individuals of all ages became geography minded. Strange place names entered the news each day. Where were Palermo, Bougainville, Dakar, Leyte, Corregidor, Guadalcanal and hundreds of other places never before heard of by many people? What climatic condition were their loved ones experiencing in these new surroundings? What strange types of peoples were living in these far-away lands? What were their

customs? Many maps and atlases were dusted off and used continually as the war progressed, old geography books and magazines were read thru again and again by the geography conscious population. The government itself placed heavy emphasis on many branches of geography. Cartographers, meteorologists and specialists in nearly all fields of geography and related fields were called to government service in Washington, D.C. Many college and university instructors spent their war years doing special teaching in the armed forces.

The present situation may be stated thus; the people of the United States are definitely geographical minded, more than ever before they see the urgent need of geographical knowledge for the air age which is upon us. The great challenge is here for all geographers and the big questions are—can we meet the challenge successfully? Will our position be strengthened? May extensive gains be expected in the immediate future?

THE GEOGRAPHICAL SURVEY

The present survey of geography in the high schools of Nebraska includes material for the two school years of 1945-46 and 1946-47 with some supplementary material from previous years. The writer used two sources of material for his study; first, the yearly records and teaching programs of the individual geography teachers,¹ and secondly, material gleaned from a questionnaire sent to the individual geography teachers in the high schools of Nebraska.

THE GROWTH OF GEOGRAPHY IN NEBRASKA HIGH SCHOOLS

In 1943 the State Department of Education of Nebraska, for the first time, placed World Geography on the list of preferred subjects for the high schools of Nebraska. It was suggested that World Geography be taught in the first year of high school.

In 1942-43 geography was taught in eighty-one high schools in Nebraska (Table I). In 1943-44 the number increased to ninety-five which was a seventeen per cent gain. The next year, 1944-45, the increase was still greater with 133 schools offering high school geography or a gain of thirty-eight per cent over the preceding year. In 1945-46 it rose to a total of 240 schools or a gain of eighty-

¹ From the files of the registrar, George W. Rosenlof, University of Nebraska. Yearly reports sent in by school superintendents.

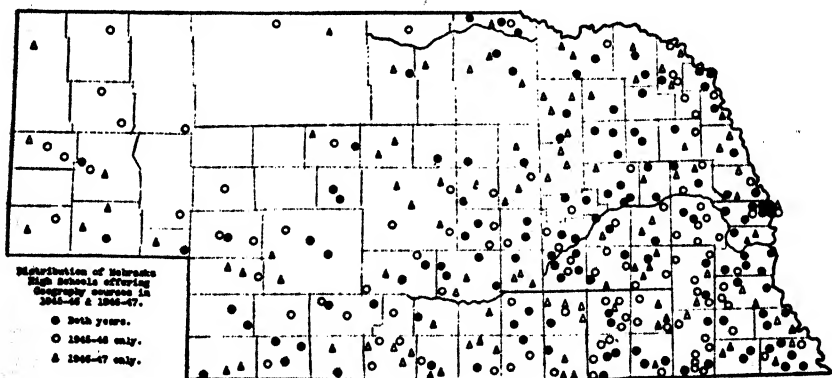
TABLE I. INCREASE IN GEOGRAPHY FROM 1942-1947

Year	Number of Schools
1942-43	81
1943-44	95
1944-45	133
1945-46	240
1946-47	240

one per cent. Thus in a three year period 1943-46 geography offerings increased about sixty-seven per cent. During the last year, 1946-47, the number showed no increase but remained at 240 schools.

In comparing the schools offering geography during the two years 1945-46 and 1946-47 the writer found that 133 schools offered geography both years, 107 high schools offered geography in 1945-46 but not in 1946-47, and 107 high schools offered geography in 1946-47 but not in 1945-46. Consequently, a total of 347 schools offered courses in geography one or both of the last two years.

During 1945-47 there were 530 city and village high schools in session in the state. This means that sixty-five per cent of the high



schools of Nebraska had classes in geography sometime during the last two years. The areal distribution of schools offering courses in high school geography is shown on the Nebraska map (Fig. 1).

THE NATURE OF THE GEOGRAPHY COURSES

The most prominent geography course taught in the Nebraska high schools is World Geography (Table II), with 199 high schools offering such a course in 1945-46 and 215 offering it in 1946-47. Over eight times as many classes of World Geography were offered

TABLE II. GEOGRAPHY COURSES TAUGHT

<i>Type</i>	<i>Number of Schools</i>	
	<i>1945-46</i>	<i>1946-47</i>
World Geography	199	215
Economic Geography	25	18
Industrial Geography	7	2
Commercial Geography	6	2
Physical Geography	0	2
Geography of Latin America	0	1
Unknown	3	0
	<hr/> 240	<hr/> 240

than Economic Geography, its nearest rival. Undoubtedly the recommendation of the State Department of Education has been a major factor in the growth of this course.

Economic Geography courses rate second in number with twenty-five schools offering such courses in 1945-46 but only eighteen in 1946-47. In 1945-46 there were also more schools teaching Industrial and Commercial Geography courses than in 1946-47. Two new courses made their appearance in 1946-47, namely Physical Geography and the Geography of Latin America. Two schools taught the former course and one the latter.

The majority of the courses in World Geography were taught in the ninth and tenth grades while the courses in Industrial, Commercial and Economic Geography were offered in the higher grades. No schools offered two geography courses at the same time, however, several schools did offer two different courses during a one year period each being taught for one semester.

The full year or two semester course was recommended by the State Department of Education. In 1945-46 158 high schools or sixty-six per cent taught full year courses (Table III). In 1946-47 this number had increased to 182 or seventy-six per cent of the total high schools offering geography. It was found that many of the one semester geography courses were alternated with history

TABLE III. LENGTH OF COURSES

<i>Number of Weeks</i>	<i>Number of Schools</i>	
	<i>1945-46</i>	<i>1946-47</i>
36	158	182
18	78	56
Unknown	4	2
	<hr/> 240	<hr/> 240

TABLE IV. GRADES IN WHICH GEOGRAPHY IS TAUGHT

<i>Grades</i>	<i>Number of Schools</i>	
	<i>1945-46</i>	<i>1946-47</i>
9 only	76	80
9 and 10	71	70
10 only	16	18
10 and 11	10	7
11 only	3	5
11 and 12	24	26
12 only	7	8
10 and 12	3	0
10, 11, 12	11	8
All grades	17	14
Unknown	2	4
	<hr/> 240	<hr/> 240

courses. Other schools had one semester of geography succeeded by a semester of economics or agriculture.

There has been a steady increase in the teaching of geography in the ninth and tenth grades (Table IV). In 1946-47 168 schools or seventy per cent of the total number of high schools offered courses in these grades, forty-three schools or eighteen per cent offered courses in the eleventh and twelfth grades, and twenty-nine schools or twelve per cent had other combinations of grades taking geography. Small schools usually are responsible for such combinations of grades. This increase of geography in the ninth and tenth grades in Nebraska is a reverse of the conditions found in Arkansas² and Missouri³ where a large percentage of the geography was taught in the eleventh and twelfth grades.

The size of geography classes varied widely (Table V). It was

TABLE V. SIZE OF GEOGRAPHY ENROLMENT IN HIGH SCHOOLS

<i>Number Enrolled</i>	<i>Number of Schools</i>
1-10	37
11-20	102
21-30	60
31-40	20
41-50	7
51-100	3
100 and Over	3
Unknown	8
	<hr/> 240

² Collier, James E., "Geography In The High Schools of Arkansas," *THE JOURNAL OF GEOGRAPHY*, Vol. 42, April, 1943, p. 134.

³ Odell, Clarence Burt, and White, Leslie Wood, "The Status of Geography in the High Schools of Missouri," *THE JOURNAL OF GEOGRAPHY*, Vol. 41, February, 1942, p. 41.

found that 199 high schools or eighty-three per cent had class enrollments of thirty or fewer students. Only six schools or less than three per cent had enrollments over fifty students. One school had an enrollment of four hundred students with numerous sections being offered. But on the whole, it was evident that many of the larger high schools over the state failed to offer any geography courses above the seventh grade.

TRAINING OF TEACHERS

Considerable time was spent by the writer in checking the preparation of those who were teaching high school geography. The results were astonishing and revealed one of the greatest weaknesses in the geography field (Table VI). Of the 240 persons teach-

TABLE VI. TRAINING OF GEOGRAPHY TEACHERS IN NEBRASKA

<i>College Work</i>	<i>Number of Teachers</i>
None	98
1-2 hours	31
3 hours (1 semester)	17
4-5 hours	14
6 hours (2 semesters)	15
9 hours (3 semesters)	12
10-16 hours (Minor)	23
17-24 hours (Major)	7
25 or more hours (Masters)	3
Unknown	20
	<hr/> 240

ing geography, ninety-eight had had no college courses in geography and thirty-one had two hours or less. This is a total of 129 teachers or fifty-four per cent who had less than one semester of college preparation in the subjects they were teaching. Thirty-three teachers or about fourteen per cent of the total number of geography teachers had over ten hours of college work or the equivalent of a minor in geography. Therefore, if we assume that ten college hours in geography are needed by a teacher to be prepared to teach geography effectively, only about fourteen per cent were prepared for their jobs. Many of the teachers having only a few hours of training have received their credit by extension work or possibly thru summer school courses.

By checking the major field of preparation of those persons teaching geography, it was found that the largest number was from the field of English with history coming second (Table VII). Nearly every field of university study was represented among the major

but only three geography majors were among those teaching geography in the high schools of Nebraska.

Most of the teachers having three or more hours of college credit in geography received their training from one of the four State Teachers Colleges of Nebraska (Kearney, Wayne, Chadron or

TABLE VIII. MAJOR FIELD OF THOSE TEACHING GEOGRAPHY IN NEBRASKA

<i>Major Field</i>	<i>Number of Teachers</i>
English	55
History	43
Social Studies	26
Mathematics	14
Foreign Language	13
Educational Administration	13
Music	7
Biology	6
Home Economics	6
Commercial	4
Geography	3

Following each had 3:

Physical Education, Art, Speech, Sociology, Chemistry, Philosophy and Economics.
Unknown: 29

Peru), the University of Nebraska, or Nebraska Wesleyan University. A few received their credit from other state universities and other normal schools.

NEEDS AS EXPRESSED BY TEACHERS

Educational leaders can always assume or guess what is needed in high school teaching but it is always interesting and valuable to have the teacher speak for himself. Questionnaires were sent to high school geography teachers thruout the state. These questionnaires went to large schools and small schools, to well qualified teachers and those having no training, and to high schools in densely settled eastern Nebraska and sparsely settled western Nebraska.

The questionnaire dealt with such critical factors as the following: the teacher's idea on the need for college preparatory courses, the equipment on hand in their local schools, the need for field trips and laboratory periods, the phases of geography most interesting to the students, the question of geography as a required subject in the high school, the grades in which geography should be taught, the textbooks used in the local high school, and the request for suggestions as to the needs of geography as it is taught in the high school today.

The teachers agreed unanimously that college preparatory

courses for the teacher were necessary to make the subject alive and interesting to the students. Discouragement ran high among those teachers who had had no training. Numerous teachers reported they were teaching the geography course simply because they had the time open for it in their teaching program and no other teacher had the time. Much criticism was placed on the school administrators, many of whom had not really welcomed geography into the curriculum.

The majority of the teachers reported that they had good equipment in their schools, that is at least one good globe, one set of wall maps, an atlas and six or more good reference books. Several schools reported subscriptions to the *National Geographic Magazine* and some reported motion picture and slide projectors in their equipment. There was a close correlation between better trained teachers and better equipment. Fortunate indeed is the school which has both. In evaluating this equipment, it should be remembered that the subject is comparatively new in the curriculum and the amount and quality of the equipment should improve with time.

All teachers agreed that both field trips and laboratory work were desirable and would add much to the value and interest in geography, but only a small percentage of the high schools offered field trips or laboratory courses. Reasons given for this neglect were the shortage of time and the over crowded teaching program that afflicts most schools. Altho not mentioned, the poorly trained teacher would not know how to prepare and conduct such field trips.

The most popular phases of geography work listed by students' preference are the following: first in favor was human geography, that is how and why different peoples live as they do; other popular phases were map studies; comparison studies involving the United States and foreign countries; current events, that is, world affairs tied up with World Geography; and climatic studies and a survey of world occupation. Those teachers having field and laboratory work reported that these were the most popular phases of the course.

All but two teachers thought geography should be a required subject in all high schools. Several teachers thought geography should hold as important a position in the high school curriculum as history, English and mathematics. There was a general consensus that it should be taught in the ninth and tenth grades if only one course was to be offered, and that more advanced courses

should be offered in the eleventh and twelfth grades. The suggestion was made by one teacher that World Geography be offered in the lower grades of high school and Economic Geography be offered in the higher grades. Advanced courses were in high favor but it was thought that the probable small enrollments would not warrant their being offered as elective courses.

Within the present framework about the best the high school teachers can do is to promote a general understanding of geography, to teach the pupils to think geographically and instill a lifelong interest in the subject. To accomplish these objectives the teacher must be well trained in subject matter and in the best possible techniques having adequate equipment and many fine personal qualities.

One of the greatest needs today is that of more and better textbooks for the high school level. At present, the three most used texts in considering the crop pattern for the land, thought must be given H. Bradley, *Global Geography* by Van Cleff, and *Modern World Geography* by Case and Bergsmark. Other texts used are:

1. *The Nations Today* by Packard-Sinnott-Overtton.
2. *World Geography* by Faigle and Thurston.
3. *Human Geography in the Air Age* by Renner.
4. *Our Air Age World* by Packard and Overtton.
5. *Economic Geography* by Colby and Foster.
6. *The Working World* by Whitbeck, Finch and Durand.

This is not a complete list but it does include the nine text books in geography most often named for use in the high schools of Nebraska.

A few teachers made their own outlines for study, and used a number of books as references, with magazines and pamphlets for additional study. About fifty per cent of the teachers used workbooks, altho most of them suggested that workbooks had their disadvantages. It seems that the workbook is most useful to the slower students, the map work being especially helpful.

Perhaps the most valuable information gleaned from these questionnaires was the teacher's suggestions for better teaching of geography. These teachers have been in direct contact with high school students so they should be well qualified to assess the needs for the advancement of geography. These suggestions are stated in order of their importance:

1. Better trained teachers.
2. More and better equipment.

3. More time for field trips and laboratory periods.
4. Better cooperation from school administrative personnel.
5. A tentative state course of study in high school geography so as to unify the attack on the subject.
6. More visual aids of the right type for the high school level.
7. Additional courses should follow the introductory course.
8. A list of available supplementary material and where this material may be obtained.

SUMMARY

Geography has gained in popularity in Nebraska during the last decade. This is evident by the steady gain in the number of high schools offering the subject, eighty-one schools in 1942-43 and 240 schools in 1946-47. During the last two school years 347 high schools or sixty-five per cent of the total high schools in operation in Nebraska had classes in geography.

World Geography is the principal course taught in Nebraska high schools. This course is taught primarily in the ninth and tenth grades. About seventy-six per cent of the high schools in Nebraska have a two-semester course, but in only a few high schools is more than one course being offered.

Many small high schools thruout the state have courses in geography, but there is a surprising lack of geography in the larger high schools of the state.

The academic preparation of teachers is the greatest problem in the teaching of geography in Nebraska. Eighty per cent of those teaching geography in high schools have not had sufficient preparation for teaching the subject. Fifty-four per cent of the total number have less than three college credits, and forty per cent have had no training in the subject at all.

Individuals trained in the field of geography are aware of the tremendous significance of geographic thinking today. Many responsible people are alert to the critical needs for more and better geography; some progress is being made but much is still to be done.

However in Nebraska the vicious cycle is at least partially broken. In college, students did not take geography to prepare themselves to be high school teachers because not enough geography was offered in the high schools. Now that geography is offered, more and better prospective teachers will train themselves in the subject.

UNIT V. JAPAN

MARY VIOLA PHILLIPS

New Kensington, Pennsylvania, High School

I. OVERVIEW

Japan is much in the eyes of the world at present. No adequate understanding of Japan and the social, political and economic changes that are taking place within the country is possible without a consideration of its geography. The location, climate, natural resources and their distribution, stages of industrial development, habits, religion and customs of the people are basic understandings, prerequisite to an intelligent appreciation and interpretation of and to attempted solution of its national and international problems.

This detailed study of the country will furnish the students with geographic facts which can be used as an aid in understanding and interpreting past and present events. They will be better able to analyze current problems in Japan and arrive at conclusions that are sound.

II. OUTLINE

A. Location—Geographical Significance

1. Range of latitude and longitude
 - a. Compared with British Isles
 - b. Compared with United States
2. Location in respect to Pacific Ocean
 - a. Influence of insular position
 - (1) In past military activities
 - (2) On people and ideas
 - (3) On development of industries
3. Location in respect to the continent of Asia
 - a. Influence of three land areas of the continent which project toward Japan
 - b. Japan's position in respect to Asia compared with England's position in respect to Europe—desire for buffer states
4. Location in respect to the United States
 - a. In terms of naval power
 - b. In terms of air power

B. Physical Framework of the Country

1. Plains—Kwantō, Mino Owari, Ishihari, Echigo
2. Mountains—Two-thirds of land area
3. Alluvial valleys
4. Volcanic and Seismic Activity
5. Nature of Coastline

C. Climate—Type of

1. Factors controlling the type of climate
 - a. Monsoon
 - b. Latitudinal position
 - c. Surrounding waters
 - d. Ocean currents

2. Violent winds—typhoons—frequency

D. The Native Vegetation

1. Abundant rainfall, varied relief and great latitudinal extent reflects a luxuriant and diversified vegetation
 - a. Sakhalin—vast forest areas of conifers
 - b. Hokkaido—deciduous broad leaves and conifers
 - c. Honshu—northern in character—deciduous and evergreen intermixed
 - d. Shikoku and Kyushu—semi-tropical and few tropical, bamboo forests widespread in lowlands

E. Population—Density of

1. Ethnic mixture of Korean, Ainu, and Malayan stock—personal characteristics
2. Religion of people and philosophy of life
 - a. Effect of religion of people
 - b. Effect of religion on rest of world
3. Types of homes—attitude toward home and family
4. Educational system—attitude toward learning
5. Inventiveness—proof of this
6. Social customs

F. Rapid Development to Dominant Power

1. Natural conditions which assisted the people in this restricted area to win and hold a place as a world power
2. Changes brought about by spread of western ideas
3. Major problems brought on by rapid development

G. Natural Conditions which Favored Japan's Development Industrially and Commercially

1. Power resources and access to resources
2. Location favorable for world trade
3. Labor supply and capital—climate favorable for regular and sustained labor
4. Transportation facilities
5. Favorable coastline

H. Types of Manufacturing Industries Japan had Developed before World War II

1. Textile industries—silk, cotton, rayon
 - a. Source of raw materials
 - b. Centers of manufacture
 - c. Amount exported
 - d. Reason for rapid development
2. Iron and steel industry
 - a. Source of iron ore
 - b. Iron and steel centers
 - c. Reasons for desire to develop iron and steel industry
3. Shipbuilding
 - a. Need of ships
 - b. Source of materials
 - c. Shipbuilding centers
4. Manufacture of paper
 - a. Raw materials
 - b. Water resources
 - c. Importance of

I. Agriculture Development

1. Conditions favorable to agriculture
2. Conditions unfavorable—how overcome
3. Leading crops
4. Self sufficient in 1937—Steady decrease after outbreak of war

J. Fishing Industry

1. Natural conditions favoring industry
2. Conditions on land which forced Japanese to fishing
3. Kind of fish caught
4. How fishing industry helped the Japanese in preparation for war

K. Japan's Industries Today

1. Changes brought about by war
2. Deterioration in the position of Japan as a world power
3. Future possibilities

L. Japanese Aggression

1. Reasons for Japan's desire for more territory
 - a. Problem of overpopulation
 - b. Need of raw materials
 - c. Need of markets
 - d. Belief that all Asiatics should be united under one political leadership
 - e. Possession of lands considered essential to defense
 - f. Desire for complete economic and political control over the source of raw materials that made its industries possible
2. History of empire acquired between 1875 and 1942
 - a. Kurile Islands, Bonin and Ryukyu Islands
 - (1) When and how secured
 - (2) Location and description of islands
 - (3) Valuable fishing grounds
 - (4) Increased arc of Japanese naval control of western Pacific
 - b. Taiwan (Formosa)
 - (1) When and how secured
 - (2) Description of land, its resources and its people
 - (3) Products and industries
 - (4) Development carried on by Japan
 - (5) Rich source of tropical raw materials
 - (6) Excellent base
 - c. Kwantung Peninsula in Southern Manchuria
 - (1) When and how secured
 - (2) Value
 - d. Korea (Chosen)
 - (1) When secured by Japan
 - (2) Location created desire for buffer state
 - (3) Conditions in Korea that made possible Japan taking control
 - (4) Attitude of Koreans toward Japan
 - (5) Koreans—homes, customs
 - (6) Agricultural and mineral resources
 - (7) Ice free harbors
 - (8) Activities of Japan in Korea
 - (9) Changes brought about by the war
 - e. Micronesia (Marianas, Marshalls, and Carolines)
 - (1) When and how secured
 - (2) Importance of location
 - (2) Area covered
 - (4) Resources
 - (5) Development carried on by Japan
 - (6) Means of extending naval control over the whole of western Pacific Ocean
 - f. District of Tsingtao
 - (1) When secured

(2) Valuable location for striking at heart of China

g. Manchuria

- (1) When and how secured
- (2) Location in respect to Japan
- (3) Description of surface
- (4) Climatic conditions prevailing
- (5) Products and natural resources
- (6) Population—Chinese immigration
- (7) Activities of Japanese

h. Other conquests

- (1) Annexed Hainan and other islands of strategic importance in 1939
- (2) Indo-China and Thailand by summer of 1941
- (3) By summer of 1942 the Philippines had been wrested from United States, Malay Peninsula and Burma from British and East Indies from Dutch

M. Japanese Aggression Ended

1. Defeat of Japan
2. Reduced to status of minor power

N. Future Problems

1. Adjustment to geographical surroundings in a limited area
2. Economic and political reorganization
3. Reshape the nation into one that will not be a threat to peace in the future

III. STUDY ASSIGNMENT SHEET

Unit V (Laboratory Work)

Japan

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1. Make a political map of present day Japan, a relief map, an annual rainfall map, and one showing the former chief industrial districts. Describe the physical framework of Japan.
2. Between what two ranges of latitude does Japan extend? longitude? Compare the range of latitude with United States. How does Japan resemble Great Britain in location? What are the advantages of Japan's insular position? the disadvantages?
3. Make a map showing the area controlled by Japan in 1942. Shade in a distinctive way the region captured after Pearl Harbor.
4. What are the names of the four principal islands? What island did Japan share with Russia? What is the area of present day Japan?
5. On a map of North America draw a map of east coast and use its exact range of latitude. At this latitude what type of climatic conditions would you find in northern Japan? central Japan? southern Japan?
6. Make a climatic graph showing the average monthly temperature and precipitation for the two stations which are described below.

Tokyo, Japan
35°50' N., 139°50' E., Altitude 90 feet

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Rainfall	2.0	2.6	4.3	5.3	5.9	6.3	5.6	4.6	7.5	7.2	4.6	2.3
Temperature	37	38	44	54	62	69	75	78	72	61	51	41

Charleston, South Carolina, U.S.A.
32°47' N., 79°56' W., Altitude 48 feet

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Rainfall	3.1	3.1	3.3	2.4	3.4	5.3	6.2	6.7	5.2	3.9	2.7	3.3
Temperature	49	52	57	64	72	79	81	80	65	67	58	51

7. What general statements can you make concerning the rainfall in Tokyo as compared with Charleston, South Carolina?
8. How would you characterize the summer temperature of both? The winter temperature?
9. What ocean currents influence the climate of Japan? What other factors influence the climate of Japan?
10. Under what social conditions did and do most of the people live? What is the state religion? What are the outstanding doctrines of their religion? What probably will be the effects of our occupation of Japan upon their social customs and conditions? Study the papers and list the reforms and changes that are taking place in Japan today.
11. What are the distinctive features of Japanese agriculture? What conditions are favorable? unfavorable? What are the chief crops? What are the causes for the lack of livestock? How is it possible for a densely settled country like Japan to supply nearly all its own food?
12. What natural factors have aided in the great importance of fisheries? Where could their fishing vessels be found? Why is Japan's diet so largely limited to rice and fish?
13. What natural conditions favored Japan's development industrially and commercially? What types of the manufacturing industry did Japan develop? What materials were bought to supply its industrial centers and from what countries of the world? What

conditions made it possible for people of Japan to work for comparatively low wages? Where did Japan get the minerals to produce its war materials?

14. When did Japan open its doors to world trade? How did Japan rank in the commercial world? What were five of its leading imports? exports? What are its future possibilities?
15. Why was Japan able to rise from an isolated unknown nation to the rank of a first-class power? List the methods Japan used to modernize itself.
16. What are three things a nation can do when it becomes over-populated? Which line of action did Japan follow?
17. Discuss Japan's mainland policy. What did Japan gain from wars with China and Russia?
18. In the chart below list the areas Japan acquired between 1875 and 1942. Tell when and how they were acquired. List the chief resources of each area.

Areas	When	How	Resources Gained

19. Why did Japan assume control of Korea? Why was Taiwan a valuable colony?
20. Why were the Japanese anxious to gain and retain control of Manchuria?
21. What sections of China proper did Japan gain control of? Why?
22. What Pacific islands were given to Japan as mandates after World War I?
23. Summarize how Japan's colonies and dependencies were important factors to it as a world power.
24. What geographical patterns of expansion did Japan follow before the coming of the age of air power? What ideas for expansion did Japan follow after becoming aware of air power?
25. Draw a map showing the Japanese geography of the Pacific based upon air power.
26. Find the great circle air line distances between Tokyo and the following cities of the world. What time would it be in each city if it were 2 A.M. in Tokyo?

Cities	Distance	Time
New York		
Chicago		
Chungking		
Manila		
Calcutta		
Moscow		
Cairo		
Honolulu		
London		
Singapore		
San Francisco		
Mexico City		
Sydney		
Panama		
Juneau		

27. What are the strategic points lying directly between United States and Japan in the Pacific?
28. Show that issues and situations that have caused most of our wars are geographical.

Terms to identify

acquisition	mainland policy
aggression	mandated
atoll	marginal
commodity	middle latitudes
concentric	monopoly
deep	monsoon
geopolitical	Occidental
humid subtropical	Oriental
humid continental	seismic
imperialistic	Shintoism
insular	strategic
lagoon	subsistence
leeward	Taiwan
low altitude	typhoon

Other Activities

1. Make a collection of newspaper clippings, maps and current topics showing the activities of the United States in Japan.
2. Prepare a written report on "The Activities of the Japanese in South America."

A GEOGRAPHIC SURVEY OF A SOUTH-CENTRAL INDIANA COUNTY

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Morgan County, of which the county seat is Martinsville, is located near the geographic center of Indiana just southwest of Indianapolis. The nearest corner is less than fifteen miles from the city's edge. It lies midway between the 39th and 40th parallels, and the 86th and 87th meridians. It has numerous general advantages of location. It is near the present center of the nation's population; it is also near a convergence of east-west railroads and trunk highways. Important urban centers, Chicago, Detroit, St. Louis, Louisville, Columbus, Toledo, and Cincinnati are not far away. It is in a great agricultural region; also near are valuable coal fields. On the whole the location is a highly favorable one.

Several specific locational advantages are: proximity to Indianapolis, a nearby market; also, state highways 37 and 67 which pass

thru this County, carry nearly half of the traffic just south of Indianapolis. U. S. Highway 40, a coast to coast thorofare, just misses the northwest corner of the County. The location is less fortunate as to rail transportation. Only two railroads pass thru the County and neither has passenger service. However, nearby Indianapolis has excellent rail service.

THE NATURAL LANDSCAPE

One of the most significant aspects of Morgan County's location is in respect to amounts of glaciation. No other Indiana county has more glacial demarkation lines or zones. The unglaciated region extends into the southcentral part; the Illinoian stage is represented, as are both the early and late Wisconsin. This diversity makes for a variety of soils and productivity.

Topography. Morgan County may be divided into four fairly distinct areas (Fig. 1). Slightly the largest is a glacial plain which is a part of Indiana's richest agricultural area. This plain occupies a strip averaging five miles in width along the northern and eastern boundaries. It is fairly level except south of White River along the eastern border. In the northwestern part of the County is the bed of a former glacial lake. Forming the southern and western limits of the glaciated plain is the outer morainic zone of the Wisconsin Ice Age. Altho terminal morainic features are few, there is a fairly abrupt transition between the till plain and the hilly area of the south-central and southwestern parts of the County. Most of Morgan County's part of this hilly upland benefited by the deposition of an older glacial till (The Illinoian). This more badly leached and eroded till is distinctly less fertile than the area covered by the Wisconsin drift. In the central and south central portions of this relatively rough upland area are unglaciated ridges. Along the southern boundary, is the County's maximum elevation and about two square miles were unglaciated.

Crossing the County diagonally from northeast to southwest is the relatively broad fertile White River Valley which comprises approximately one-tenth of the total area of the County, and is much utilized for corn and soybean production. This valley almost equally divides both the plain and the upland into a northern and southern section. The till plain portion of the valley grades gently into the rolling uplands, but in the hilly area the valley is rather distinct. Near the western edge of the till plain, the river has cut thru relatively resistant shales, leaving prominent bluffs on both

sides of the valley to the north of Martinsville. The eastern bluffs are especially striking. This fertile valley has been of distinct importance not only as a rich agricultural area but also as an avenue for trade and transportation. The railroads and highways between

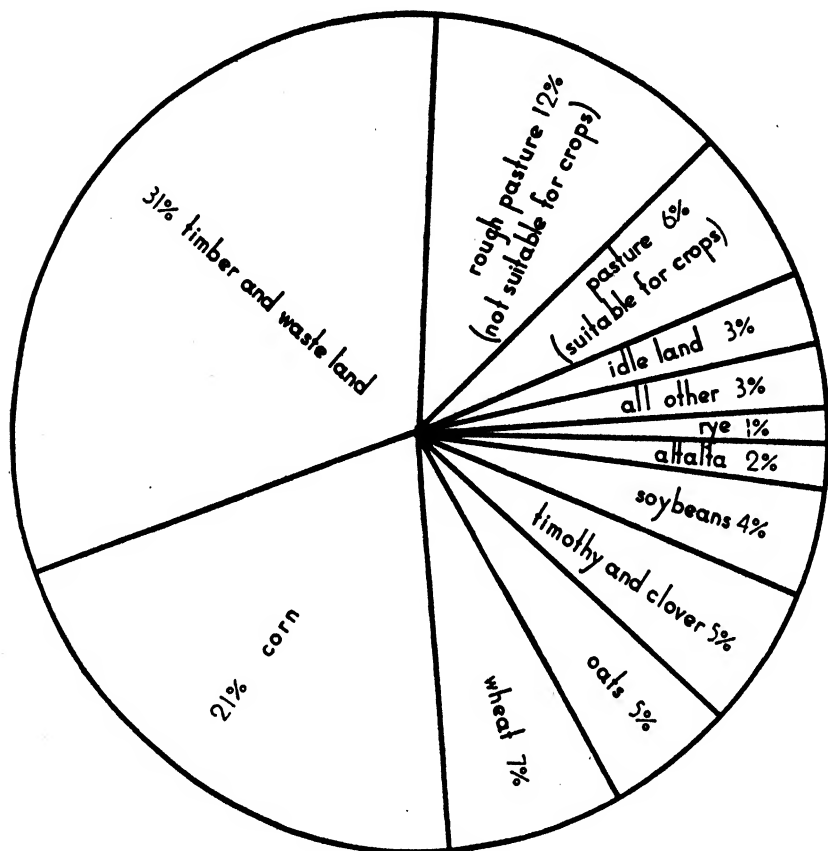


FIG. 1. Topography of Morgan County. Note the distinctly broader valley in the southwestern part of the County. This is apparently related to meltwater from the receding Wisconsin glacier.

Vincennes to the southwest and Indianapolis found it the natural route. In Morgan County the main trade routes are in the valley partly because of the rugged hill land of the western part of the County. A distinct "funnel of traffic" centers near Martinsville. White River, tho far more of an advantage than a handicap, never-

theless is subject to severe flooding, which often causes extensive damage to crops and homes.

The fourth topographic division, the Mitchell Plain, is a comparatively small non-contiguous area along the southwestern and western margins of the County. There are numerous sinkholes and one large cavern. Much of the local drainage is underground.

Drainage. The drainage of the County has a relatively simple dendritic pattern based on the West Fork of White River. Most of the County is drained by numerous creeks and "branches" whose waters reach White River within the County. There are only small poorly drained areas except the bed of the glacial lake in the northwestern corner. There artificial drainage has been carried out.

Climate. The climate of Morgan County is near the average for Indiana. The average temperature of the warmest month (July) is 76°; for the coldest month (January) it is 29°. The length of the growing season is about 175 days, approximately midway between that in the southwestern and northeastern parts of the State.

The average annual precipitation of approximately 42 inches is rather evenly distributed thruout the year, except that the spring is a little wetter than the autumn. Both droughts and floods are frequent. While droughts seldom cause total crop failure, curtailment of yield is common. Floods are most frequent in spring; fortunately for farmers in the White River Valley, they usually occur before crops are planted.

Natural Vegetation. The moderately humid climate favors deciduous hardwoods. A beech-maple forest formerly covered the northeastern part; an oak-hickory forest occupied most of the remainder. Much of the beech-maple forest has been cleared; but the rough part of the County still remains predominantly tree covered, mostly by second or third growth.

THE CULTURAL PATTERN

The production pattern of Morgan County has been one of relative uniformity thruout the past one-hundred years. Agriculture has been the dominant occupation, but manufacturing and lumbering have played prominent roles. For a quarter of a century following the Civil War, lumbering closely rivaled agriculture, but production has been steadily declining since 1900. Just as the exploitation of the hardwood forests was reaching a peak in Morgan County, manufacturing began to take on present characteristics,

with Martinsville as the center of development. Between 1890 and 1910, the period of greatest industrial growth, the clay products and the woodworking industries (furniture and cooperage) became an integral part of the industrial situation. Two other activities which have been both rather unique and significant also became well established during this twenty-year period—the goldfish industry and the commercial use of the mineral waters, both at Martinsville.

Today Morgan County remains primarily agricultural with sufficient manufacturing, principally at Martinsville and Mooresville, to contribute a sizeable part of the County's yearly income. At the 1940 census agricultural production was slightly over $2\frac{1}{4}$ million dollars, while the value of manufactured products was nearly $1\frac{3}{4}$ million. (The value added by manufacture was \$900,000.) At least five times as many persons are engaged in agriculture as in manufacturing. The sawmills and the brick and tile plants, despite their relative decline, still supply an important part of the total manufactures. Eight of the 29 manufacturing establishments were sawmills and four were brick and tile plants.

Principal Industries. Central location in respect to population density, nearness to Indianapolis, and availability of good transportation facilities have been especially significant in stimulating (1) the manufacture of clay products, (2) fish hatcheries, (3) the resort hotel business, and (4) woodworking industries. Agriculture has also profited greatly from this favorable combination of factors. Commercial apple orchards and the production of dairy products are examples where benefits have been considerable.

The development of the clay products industry has been facilitated by the presence of two sizeable outcrops of suitable shales favorably situated in respect to Indianapolis and transportation facilities to Indiana coal.

Sawmilling has depended primarily upon the relative nearness of raw materials. The comparative stability of the lumbering industry has facilitated the furniture and cooperage industries, especially at Martinsville.

The food industries, chiefly milling of wheat and corn and canning of tomatoes, are partly dependent upon the relative suitability of Morgan County's soils, climate, and topography for the production of these crops. As more favorable conditions for processing wheat and corn are found in Indianapolis and in various other parts of Indiana milling is of local importance.

The most unique and probably its most widely known industry

is Morgan County's goldfish hatcheries which are reputedly the largest in the world. The industry originated just northeast of Martinsville where abundant glacial gravels yield large natural springs. Martinsville was also soon discovered to possess climatic conditions approaching the optima for the commercial production of goldfish. Favorable site and climate were much enhanced by central market location and a relatively cheap labor supply.

Agriculture. Notable local contrasts in agriculture are apparent in Morgan County. The almost level glacial plain and the White River Bottoms on the one hand and the rough uplands on the other offer considerable diversity. The important influence of varying degrees of glaciation is admirably exemplified. The abundant glacial drift in the north has meant fine opportunities for agricultural production; in the south, the lack of drift has helped produce a poor area agriculturally. The study of average corn yields for different parts of the County reveals a close correlation between yields and amount of glacial drift.

Agricultural production has been maintained in spite of improper use and damage to soils by erosion. Hybrid corn, the use of fertilizer on some soils, and better farming techniques have increased yields on the more progressive farms. Change in the agricultural scene has come gradually. Since 1930 the increased acreage devoted to soybeans and alfalfa, with a concurrent decrease in wheat and oats acreage, has been significant because the introduction of these crops offers possibilities for greater diversification and better use of soils. Fig. 2 suggests the relative importance of different land uses during a recent decade (1935-44). While decrease in value of cereals has been relatively small, the increased value of hay and forage, vegetables, and fruits is apparent. Further shifts in production away from corn, wheat, and oats appear probable. A pronounced decrease in value of horses and mules reflects the steady increase in farm mechanization. More beef and dairy cattle are produced without an increase in grain production.

Trade and Transportation. The most significant feature of the transportation system of Morgan County is the dominance of the White River Valley. This valley dissects the rough upland making it advantageous for principal routes to follow the valley. Nearness to Indianapolis has given the County two first class state highways radiating out of that city. Two U. S. highways flank the northern and eastern boundaries.

In commercial activities Martinsville dominates most of the

County; the growth of nearby Indianapolis has, however, weakened its status. Mooresville, a secondary center lacks the central position and the convergence of transportation routes that Martinsville possesses.

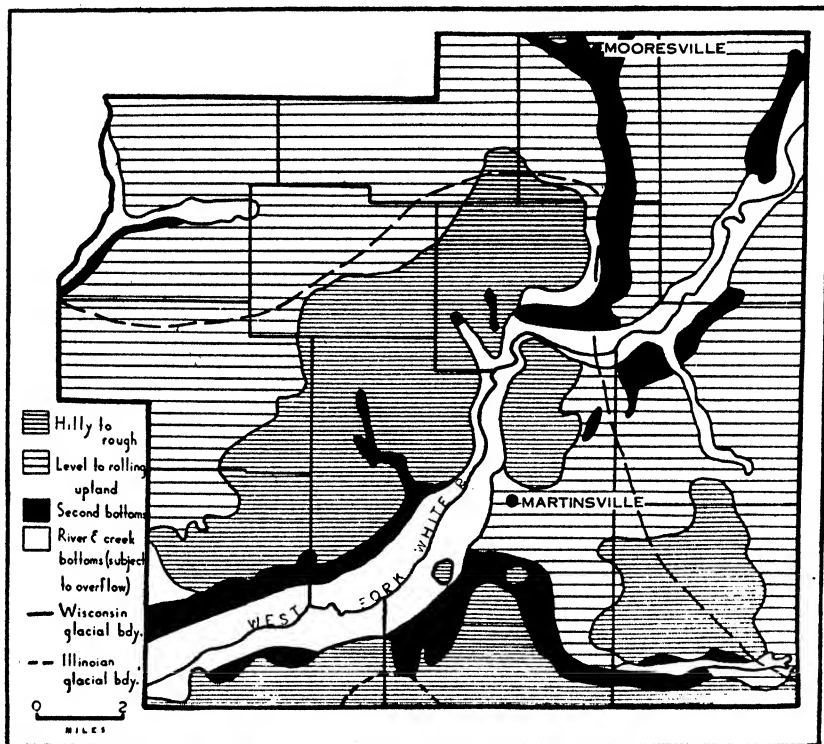


FIG. 2. Land utilization in Morgan County. Based on a 10-year average (1935-44) of acreage devoted to various uses.

SUMMARY

It is probable that the present production pattern will not be altered drastically within the next quarter of a century; however, it is reasonable to assume that nearness to Indianapolis, which is still a growing city, may mean an increase in manufacturing, especially of items requiring specialized labor and few heavy materials. In agriculture a diversification and intensification is probable. Less corn will be grown. Again nearness to Indianapolis is likely to stimulate truck farming and dairying.

MAGNESIUM—THE METAL FOR MOTION

W. O. BLANCHARD
University of Illinois

THE IMPORTANCE OF TRANSPORTATION

One of the most fundamental geographic facts which you and I have come to appreciate is that the world's natural resources are limited in extent and are very unequally distributed. The valuable forests, the important mineral deposits, the worthwhile fisheries and the fertile soils occupy very restricted areas and they are separated from each other by vast relatively unproductive regions. Not even within the boundaries of the *largest nations* are there sufficient quantities of all the materials required by the people residing there. National self sufficiency may be a good political catch phrase but nature has seen to it that in practice it has very definite limitations.

As a consequence of this situation a large part of man's time and energy is expended in moving the world's goods about—shifting them from where they are to where he wants them to be. The problems of transportation form, as we well know, much of the subject matter of our commercial geography.

Improvements in transport have been affected in many ways. One line of attack has been the leveling of the transportation route. Man has drilled tunnels thru obstructing mountains, bridged troublesome rivers, and cut canals across isthmuses. Another group of improvements has focused attention on the power which motivates transport. Human muscle gave way to animals and the wind to steam. Still a third group aimed to reduce the bulk of the goods to be moved so as to eliminate carrying waste material. Ores may be smelted, logs reduced to finished lumber, fruits dehydrated, corn converted to beef or pork, before long distance shipment to market. A fourth type of change of special interest to us has sought to reduce the weight of the carriers themselves. Our ships on the waters and our vehicles on the land, our trains and our planes have all been too heavy. The car you drive weighs from three to five times as much as the passenger load in it and, of course, the greater part of the gas you fed it is used to push that ton of steel; only a small fraction, to move the load.

MAGNESIUM ENTERS THE TRANSPORTATION PICTURE

It is in the reduction of the weight of carriers, as well as that of many tools, machines and appliances, that the light-weight metals aluminum and magnesium fit into the picture. The former has, in the past 60 years, made for itself a very definite place as a

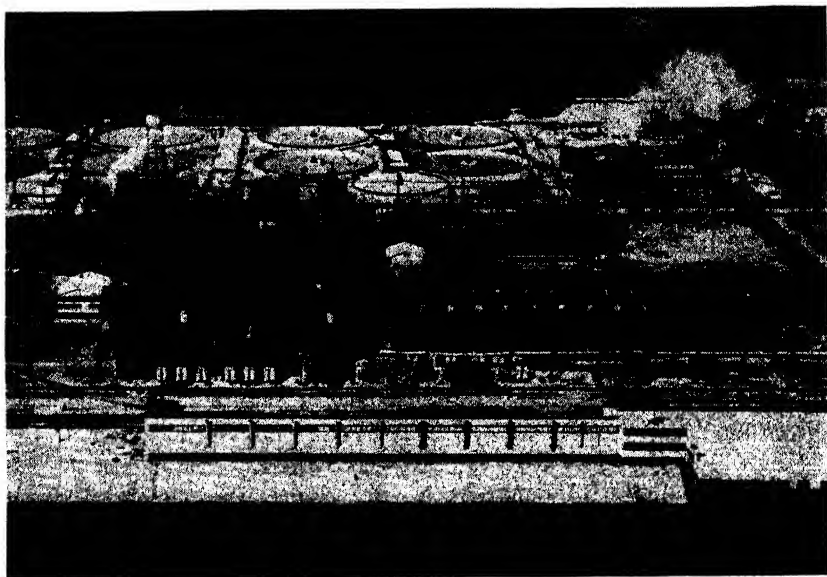


Fig. 1. Aerial view of the Dow Chemical Company magnesium plant at Freeport, Texas. The ten round objects at the left are the Dorr tanks in which the sea water is mixed with slaked lime for the first step in the magnesium process. To the right appears the primary oyster shell storage and the kilns in which the shells are burned to lime. The filters and evaporators where magnesium chloride liquors are concentrated and the cell buildings appear in the foreground of the photograph. Courtesy of The Dow Chemical Company.

construction metal. Magnesium on the other hand is a newcomer with scarcely a decade of experience in which to prove itself. It is still on trial and like the rookie on the team its performance in competition will be watched closely. Let us recount a few of the factors which affect the production of the metal and which point the way toward its place among structural metals.

Known to metallurgists for the past century and a half, magnesium for most of that time was little more than a laboratory

curiosity. Extremely high costs of production automatically eliminated most markets and metal users knew little of its qualities.

Magnesium, like many people, in a state of single blessedness, seemed quite unstable. It was known to have a strong affinity for oxygen and in powder or ribbon form it was about as inflammable



Fig. 2. Tons upon tons of oyster shells, dredged from Galveston Bay, arrive by barge at the sea water plants where they are washed and fed into long cylindrical kilns and burned to lime. The lime, after slaking is mixed with raw sea water and precipitates magnesium hydrate (common milk of magnesia). Courtesy of The Dow Chemical Company.

as gasoline. Photo flash powder in peace and incendiaries in war seemed to be about the limit of its usefulness.

Except for its incendiary use in war time the world took little interest in the metal. Germany, however, conducted extensive research into its possibilities—especially during the twenty years between World War I and II. Not till 1940 when European skies were already dark with Axis planes did we become aware of that country's extensive use of magnesium in plane construction.

WORLD WAR BOOMS MAGNESIUM

With this discovery and with the race for air supremacy on we started a mad rush to locate sources of raw materials, to build plants for producing and fabrication of the metal, to establish research laboratories—in short to do in a few months a job that Germany had worked at for two decades. Under the stimulus of military urgency and backed by a lavish use of government funds American production rose at a rate unparalled by that of any other basic commodity.

The peak output was reached in 1943 during which year production amounted to about 500 tons per day. Estimates of war time needs had been far too large and some of the plant capacity never got into production. With the coming of peace the problem of estimating civilian needs and of disposing of surplus plants is with us—as it is in aluminum, rubber and many other industries.

MAGNESIUM FROM THE SEA

One of the most interesting chapters in the story of magnesium is its production from sea water. The latter contains about one part of the metal in every 800 of water. A bath tub of ocean water contains about four ounces of magnesium. This is far less than in ores or in brines but the reserves in the ocean are unlimited and in a form easily handled.

After a search for possible location along the Atlantic and Gulf coasts, Freeport, Texas, was selected as a site. Here was found an unusual combination of favorable conditions. A peninsula offered access to water on three sides. Waste water from which the metal had been taken could be returned to the ocean seven miles distant so as to not dilute the waters being used. All essential raw materials were within easy reach. Oyster shells dredged from the bottom of the bay were calcined for lime; sulfur and salt were available in nearby deposits; unlimited natural gas was to be had from adjacent fields; a deep channel provided water transport in addition to rail connections. The army provided a market for every pound produced. It was the sort of combination a manufacturer dreams about but rarely finds.

Here the Dow Chemical Company produced in 1941 the initial ingot of magnesium—the first time that a metal had been extracted in commercial quantities from the sea. A cubic mile of ocean water contains over ten times as much of the metal as we produced in our best year. The chemists tell us all of the ninety odd elements are

in the ocean and they estimate that in a cubic mile these items would have a total value of some five billion dollars. However, to our obvious question he shakes his head. Practically all are in such minute quantities that extraction is impracticable.

MAGNESIUM SHIFTS FROM A MILITARY TO A CIVILIAN CAREER

During the war costs were largely ignored. Air supremacy was vital and a difference of a few hundred pounds in weight of planes could easily spell the difference between success and failure. The substitution of magnesium alloy in a single wheel of a bomber saved 100 pounds. With the shift from a military to a civilian career, however, the rules are changed and the newcomer must show he is better than competitors at the same price or be discarded.

CHARACTERISTICS AND SUGGESTIVE USES

In the pure form, magnesium like aluminum, is soft and weak but in the "wedged" state it is at its best. Alloyed with a little aluminum, manganese and zinc it is strong and tough. Its greatest asset is its lightness. It is only two-thirds the weight of aluminum; one-fourth that of

steel. Pound for pound it is nineteen times as rigid as steel. Its strength: weight ratio is fair. Obviously its future seems to lie in fields where lightness is all important—in transport carriers, especially airplanes, and in numerous items which have to be moved—portable tools, home and office equipment, machines with movable parts as in textile apparatus. In fact everything which moves and

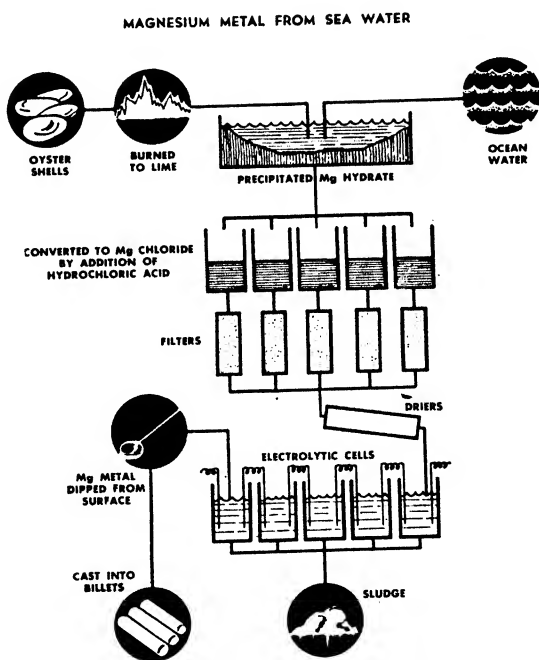


Fig. 3. Diagram showing steps in separating magnesium metal from sea water. Courtesy of the Dow Chemical Company.

in which weight is undesirable, if it doesn't require too much strength, can pay a premium for magnesium. Suggestive of its possibilities are wheelbarrows weighing 30 pounds equal in strength to a steel barrow of 85 pounds; a 24' extension ladder of 31 pounds replaces one of wood weighing 63 pounds; lawn mowers weigh about one half as much as those of steel, etc. Magnesium is an excellent conductor of heat and this, combined with its lightness makes it well suited for kitchen utensils.

At present the chief obstacle to a wider use is price. The pure metal can be produced almost as cheaply as aluminum but fabrication costs are almost three times as high. With the new techniques learned during the war and with mass production methods, prices should be much reduced. However, prices of aluminum, its present competitor are also trending downward.

The search for structural materials which combine lightness, durability, high tensile strength and cheapness is never ending. Magnesium gives promise of occupying a prominent place among non-ferrous metals altho such a position may require a decade or more of research. Metallurgists predict however, that neither of the light metals magnesium nor aluminum will supplant steel as the basic metal of industry.

THE NATIONAL COUNCIL AT WORK

Since the term of office of the President of the National Council terminates at the end of January, this article will conclude the series of organization pages by the present incumbent. Reporting and commenting upon the activities of the officials and committees of the Council have been pleasurable experiences. Yet there are regrets that plans for a more comprehensive survey of the work of the Council during the past year did not materialize. These few remaining lines can hardly be more than sentence summaries of the work of committees:

An extended account of the objectives and functions of the Planning Committee has been given on an earlier organization page. A recent detailed report by the chairman, Mrs. Katheryne T. Whittemore, outlines fifty projects for consideration by the Council. It includes comments made in relation to these by Council officials reviewing an earlier draft. One of the projects—Proposal for Committee on Color Transparencies—has already advanced to the promotion stage. Details of the project have been submitted by mail to the Executive Board, which has approved same.

The Publications Committee has been organized to plan a publications program, to review manuscripts submitted and to make recommendations thereon to the Executive Board, and to review requests for grants-in-aid from the Publications Fund for publications of material in geographic education. Miss M. Melvina Svec, the chairman, has listed some of the types of publications considered, problems involved, costs for different types of printing, etc.

Several members of the Committee on Geographic Education for World Understanding have had various conference contacts with educational agencies, such as the United Nations Educational Scientific and Cultural Organization and the National Education Association. Both the chairman, Sidman P. Poole, and the secretary, Mrs. Erna Grassmuck Gilland, report enthusiastic audiences with respect to geographic education promotion programs as they fit into the general objectives of the national and international education programs. It is hoped that the National Council will find a way of meeting the suggestion that the NEA and the NCGT jointly sponsor a publication to show the part that geography education plays in world understanding.

At the request of Clyde F. Kohn, editor of the 1948 Yearbook of the National Council of the Social Studies on Geography, a Yearbook Committee was appointed to act in an advisory capacity. A large number of chapter contributions to the Yearbook appear as papers on the Charlottesville program. Mrs. Katheryne T. Whittemore, the chairman, reports the committee as favoring the continuance of the committee until the Yearbook is completed.

The Council several years ago approved the recommendation of the Committee on Standards of Certification for the Teaching of Geography in High Schools for the appointment of a High School Geography Curriculum Committee. Such a committee was subsequently appointed. At the Executive Board meeting at Columbus last year it was suggested that the work of this committee be expedited by the republication of pertinent material already published in the JOURNAL. The chairman, Miss Zoe A. Thralls, has turned in an outline for the contents of this proposed unit as one of the Council's Geographic Education Series. Miss Thralls in another connection has served as a committee of one to answer various inquiries directed to the Council.

The Aviation Geography Committee, of which Dr. R. L. Tuthill is chairman, reports the preparation of bibliographies of materials on aviation available from commercial airline companies and other sources.

David J. Swartz, as Director of Public Relations, reports the compilation of an up-to-date mailing list to expedite Council releases. He suggests among other things

the preparation of a list of state executives as soon as possible to aid releases of prepared articles on geography for local papers.

Last year Mrs. Katheryne T. Whittemore pointed to the desirability of having a Council seal. A committee was set up with Loyal Durand, Jr. as chairman. Thirty-five designs have been submitted and reviewed, one of which is being recommended for adoption by the Council.

The President of the Council has been requested during the past year to set up special committees to award prizes to contributors of the most outstanding articles to the JOURNAL in four different divisions of geography, during a recent five-year period. The prizes are contributed by an anonymous donor to honor editors of the JOURNAL and other leaders in the geographic field. So far two prizes have been awarded: The Richard Elwood Dodge Prize to Dr. Otis W. Freeman for his article "The Pacific Island World," and the Ray Hughes Whitbeck Prize to Dr. Bruno Lasker for his article "Mineral Resources of Southeast Asia."

Two more prizes are in the offing: The J. Paul Goode Prize, and the George J. Miller Prize. The jury of each award is made up of the President, the First Vice-president, the Second Vice-president of the Council and two associate editors of the JOURNAL to be selected by the President.

ALFRED H. MEYER, *President*

EDITORIAL NOTES AND NEWS

The JOURNAL OF GEOGRAPHY is again pleased to announce 1948 prizes to honor Dr. A. E. Parkins and Dr. Ellsworth Huntington. The prize named in honor of Dr. Parkins is to be for an article published in the JOURNAL within the last decade on the subject of conservation or some study of the South. The prize named in honor of Dr. Ellsworth Huntington is for an article or series on Eurasia, or on climate, and published in the JOURNAL within the last decade. Both Dr. Huntington and Dr. Parkins received the Distinguished Service Award from the National Council of Geography Teachers. Each served as president of the Association of American Geographers and Dr. Parkins also served as president of the National Council of Geography Teachers. He was also one of the editors of the textbook "Our Natural Resources and Their Conservation," half of the royalties on the sales of which went to the National Council of Geography Teachers and half to the Association of American Geographers. Both Dr. Huntington and Dr. Parkins were frequent contributors to the JOURNAL. As readers of the JOURNAL are aware, these prizes have been made by an anonymous donor with the thought of promoting geographic education in America.

H. BOWMAN HAWKES informs us that a new department of geography has been set up at the University of Utah. The department is a unit of the Division of Earth Sciences in a newly organized School of Mines and Mineral Industries. Mr. Hawkes becomes the first Professor of Geography in the new department. The JOURNAL extends to him and to the University its congratulations and best wishes for a successful growth.

WELLINGTON D. JONES, professor emeritus at the University of Chicago, recently spent two weeks with the Department of Geography at Syracuse University. His principal talks centered around the subject of "What Geographers Need to Know About Soils and Associated Land Use."

On Friday, November 15, a conference was held for geography instructors within the service area of the West Chester Pennsylvania State Teachers College under the direction of Miss Harriet A. Elliott, head of the geography department. Dean Winfield W. Menhennett extended the greetings of President Charles S. Swope who was unable to attend. After the introductory remarks by members of the college staff on the purpose and philosophy of modern geographic training, a general session of discussion was held to consider problems and methods of classroom teaching. Preliminary steps to organize a local council of geography teachers were taken with the appointment of William J. Wunsche, of Ridley Park High School, as temporary chairman in charge of organization.

It is reported that almost 78 million gross tons of iron ore were shipped out of Duluth during 1947. This is a peacetime record for ore shipment on Great Lakes vessels, as compared with a little over 65 million tons in 1929. The all-time war record was a little more than 92 million tons in 1942.

GEOGRAPHICAL PUBLICATIONS

James C. Malin. *The Grassland of North America*. 1541 University Drive, Lawrence, Kan., 1947, pp. 402, \$3.00.

This volume is by a professor of history of the University of Kansas who has studied the grassland for many decades, often with a distinctly geographic approach. In addition to a useful summary of numerous aspects of the grassland, North Dakota to Texas especially, there are extensive references to the literature (62 pp.) and to the available maps. Of special interest to geographers are the eleven chapters on "historiography." Discussed there are the communications revolution, pioneering toward grassland equilibrium, with some pages on the work of each of a dozen leaders, including N. S. Shaler, J. W. Powell, H. L. Shantz and Isaiah Bowman. Soil physics and tillage are discussed in a chapter. Twenty pages are devoted to Webb, the chief writer on the regionalism of the Great Plains. Other chapters deal with studies of population, agriculture, land tenure, cities, and the harmonization of culture. An appendix is devoted to grassland map studies.

Teachers of regional geography of the United States will find much factual material summarized in this book, many helpful references to literature, and numerous thought-provoking deductions. All geographers who study this book will find their breadth of view enhanced.

Indiana University

STEPHEN S. VISHER

J. B. Caldwell. *Introducing Alaska*. 202 pp., G. P. Putnam Sons, New York, 1947, \$3.75.

The stated purpose of the author is to give detailed information to individuals who plan a hunting, fishing, or sightseeing trip to Alaska or are interested in the commercial possibilities of its timber, minerals and metals, fish, furs, industrial development, or farming and ranching. He has attempted to analyze both the opportunities and the drawbacks pertaining to activity in the Territory. The objective has been accomplished as well as could be expected in as brief a publication.

Perhaps the greatest single value of the publication is the compilation accomplished. Although there is little in the volume not readily available in other publications, Mr. Caldwell has condensed a variety and volume of material into one small publication. The author understandably falls short of presenting an overall picture of Alaska and Alaskans. For instance, the large proportion of Indians and Eskimos in the population and its problems is hardly mentioned.

Apparently the material has been carefully checked for accuracy of individual statements. However, inasmuch as the work is not documented, it is difficult to check the sources of some of the facts which might be questioned. The author has spent some time in Alaska during the past decade. The publication has been favorably commented on by a number of prominent Alaskan business men and government agents.

The material is written in a simple, matter-of-fact vein. The syntax is influenced somewhat by that of the various source materials and flavored by original statements of interesting facts, ideas and advice by the author, some of which may not otherwise be readily available.

The first chapter, "General Information," is understandably weak. This apparently results largely from the inclusion of so many items in a limited space. From the somewhat inadequate treatment in this chapter, the reader may draw some erroneous conclusions.

This publication may satisfy to a considerable degree the increasing interest of people about Alaska. The reader whose interest is casual rather than academic may find it sufficient for his needs. An index and a better reference map would add to the value of the work. The pictures are large, very good, and adequately support the general theme. The data may rapidly be outdated because of the inclusion of details pertaining to current regulations, laws, prices and similar information.

OVID MILLER McMILLION

*Wilson Teachers College
Washington, D.C.*

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A GLIMPSE OF OKINAWA

LAURENCE GRAMBOW WOLF

New York City

Okinawa Shima was almost completely unknown to Americans until recently. Even now, most Americans visualize it as a small pin-point of land somewhere in the western Pacific. Actually, however, it has an area of some 485 square miles, and before World War II, supported nearly half a million people. It is the largest of the Ryukyu Retto—that line of islands extending from Formosa to Japan's southernmost main island, Kyushu, which divides the China Sea from the Pacific (Fig. 1).

Okinawa's obscurity is mainly the result of its inconsequential geographical location—the fact that it is not located upon a route to or from anywhere of importance. At only three periods has the island enjoyed any real significance. The first of these was in prehistoric times when it lay along the route of Mongoloid and Malayan folk mi-

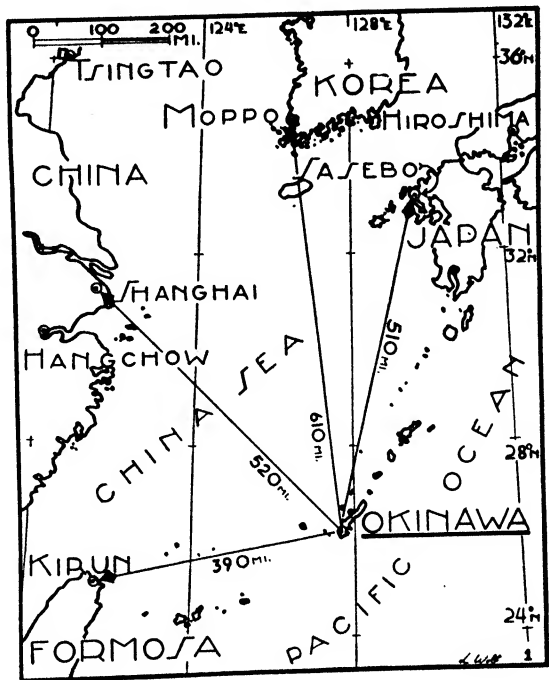


Fig. 1

grations into Japan. The second was during the seventeenth and eighteenth centuries when it served as a base for a more or less illicit trade between Japan and China. The third occurred during the recent war when it lay in the path of the American operations against Japan. As an invasion objective, Okinawa at once became spot-

lighted in American public attention. The havoc wreaked upon the island was astonishingly great. After the shock of the invasion, thousands of American soldiers poured into the island. Great caravans of G.I. trucks jammed the narrow Japanese roads many weeks after the Battle of Okinawa had ended, bringing servicemen past the wreckage of the recent battles, thru miles of abandoned fields, to their various bivouac areas. The island did not have any "gay spots" wherein a soldier might forget his homesickness or battle-fatigue. Nevertheless, in its own way, Okinawa was interesting and picturesque.¹

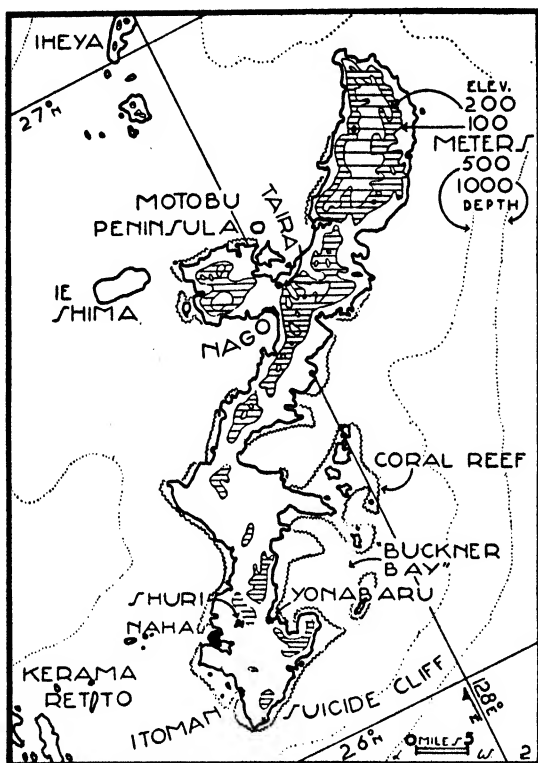


Fig. 2

PHYSICAL CHARACTERISTICS

Okinawa is 65 miles long and varies in width from three to 15 miles. Its coast has many steep-sided inlets as well as long, broad, sandy beaches. Inland, the terrain of the island is rolling to steeply hilly. As one of the Ryukyu Retto, it is part of a chain of sunken

¹The writer spent some seven months on Okinawa Shima.

mountains which rises several thousand feet from the sea floor with only the summits above water. The highest point on Okinawa is approximately 1,600 feet above sea level.

The island lies some 26.5° north of the Equator, or as far north as southern Florida, and 128° east of Greenwich. The warm Japan Current flows past the island. Okinawa Shima² is almost equidistant from China, Formosa and Japan.

The distribution of the 480,000 (pre-war) inhabitants and their cultivated fields reflect the physical structure and surface character of the island to a considerable degree (Figs. 2 and 3).

The northeastern portion of Okinawa Shima was "off limits" to all but a few American servicemen stationed on the island in 1945-46, and formed a refuge for large numbers of Okinawans at that time. It is a wild area containing many tree-clad hills rising precipitously from the seashore and contains few areas of cultivatable land. It was the most thinly populated part of the island in peacetime. As one

proceeds southward from this rugged, picturesque area of igneous and paleozoic origin, the relief becomes more gentle. Plateaus and small areas of littoral plain occur, and there the pre-war population was denser. The densest habitation occurred in the southernmost

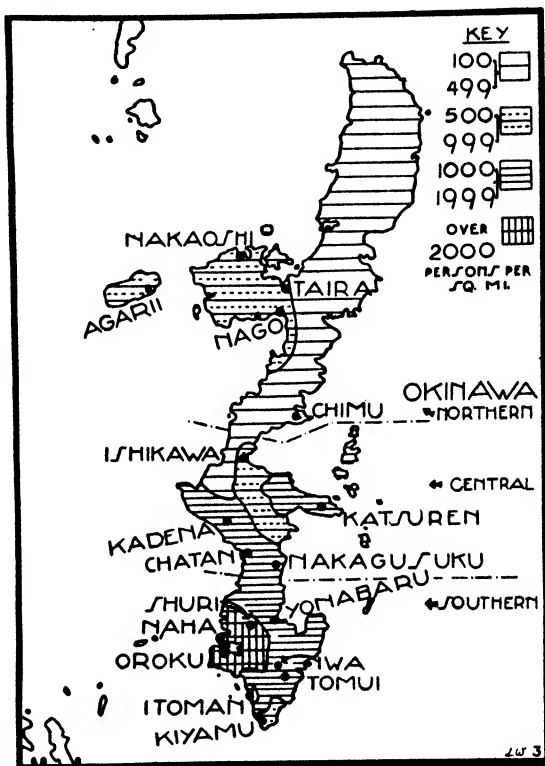


FIG. 3

² "Shima" is Japanese for "island." It may also be spelled "Jima."

quarter of Okinawa Shima, where one to three thousand persons per square mile was a normal condition. This area contained the commercial port of Naha, the fishing port of Itoman, and the capital city of Shuri. Here the coast is lined with dykes protecting sea-level rice paddies. The low rolling hills of tertiary strata maintain many acres of sweet potatoes. Clays, gravels, and limestones are abundant. The southern tip of Okinawa has steep escarpments facing the sea, one of these being the tragic Suicide Cliff. Numerous islets occur to the east and west of southern Okinawa.

Coral reefs fringe Okinawa Shima, forming tidal flats which are exposed at low tide. These flats appear firm to the uninitiated. They are, however, a soft ooze of a greyish-brown color, composed of the debris of coral, shellfish, and other matter. Because of their origin, and possibly because of the fecal origin of Okinawan farm manure as well, these flats have a characteristic odor. At low tide the muck flats can be seen to extend from the shore of the main island out beyond the lesser islets, in some places, for more than two miles. This is especially true in southern Okinawa.

Several peninsulas contribute to Okinawa's peculiar shape (Fig. 2). The largest of these is Motobu, a heavily populated hilly area extending westward from the northern, rugged portion of the island. In the winter of 1945-46, an almost continuous village extended along the road from Nago at the southeast corner of Motobu to Taira at the northeast corner. The normal settlements along that route served as the nuclei of a large refugee population. Because of its multicolored coral cliffs, its forested hills, well populated glens and many coves with small fishing villages, Motobu Peninsula is one of the most scenic areas of Okinawa Shima. It is approached from the south by a narrow, tree-shaded road which winds in and out along the coast between the ancient sea-walls and the hills, and affords the traveller a view of the hills of Motobu long before he reaches their vicinity.

To the west of Motobu is Ie Shima.³ The outstanding physiographic peculiarity of this island can easily be seen from Motobu peninsula—an abrupt, isolated hill, some 600 feet high, occupying the eastern portion of the small, roughly elliptical island of Ie.

Okinawa does not have large or valuable deposits of any mineral. It is said, however, to have slight and inferior deposits of bauxite, iron, coal, travertine, sulfur, and sufficient limestone for building purposes.

³ It was on Ie Shima that Ernie Pyle lost his life. "Ie" is pronounced "E" "A."

CLIMATIC CHARACTERISTICS

Climatically, Okinawa Shima is situated in a humid subtropical, monsoonal region, with an annual rainfall of 83 inches, distributed so that December receives the least rainfall (four inches), and June and August the most (ten inches). Okinawa has an annual average temperature of 72°F., ranging in a normal year from 61° in January to 82° in August. An abnormal temperature range could embrace the higher 90's and lower 40's. Frost is unknown. The island lies in the path of typhoons and these are frequent altho they vary in number and intensity from year to year. The well-known October typhoon of 1945 was of sufficient strength to destroy many airplanes and vessels, and unhoused many thousands of servicemen. It also completely stripped the airplane hangars in its path of everything but their skeletal steel framework. Perhaps it is not only a folkway, but a bit of geographic wisdom, that the Okinawans almost universally build their primitive homes sturdily, close to the ground, and surrounded closely by trees and shrubs.

Because of the nature of the cloud formations, the abundance of moisture, and the swiftness of the winds, both sunsets and sunrises are often of great beauty in both form and color. The natural phenomenon whence the imperial rising-sun emblem was derived, can be seen many mornings during the year. The sky, during a large portion of the year, is bright and sunny, with swiftly-moving cumulus clouds. Rain falls characteristically in sudden showers of short duration, with but a very local diminution of the sunlight. The clay soils, after a rainfall, form a particularly sticky variety of mud. At times the sky is grey and a cold wind blows in briskly from across the white-capped China Sea. The island then appears bleak and inhospitable as its dark pines and rocky ledges reinforce the weather's unpleasant aspect. On a warm, sunny day, the banana, sago, hibiscus and other subtropical flora please the eye, and the red tile roofs gleam cheerfully.

THE OKINAWANS

The first human arrivals, their physical and cultural characteristics, and the date of settlement, are lost in pre-history, but a glance at any large group of Okinawans will convince even the most amateur observer that these people are of diversified origin. The short, brown-skinned Malay, the light-skinned, hairy Ainu, the round-headed, flat-featured sallow Mongoloid, and others whose

names we do not know, have contributed to the ancestry of the average Okinawan. In general, it can be said that Okinawans are shorter and stockier, are more hirsute and have wavier hair than have the Japanese. The Mongoloid eyefold occurs in approximately two-thirds of the population.

OKINAWAN CULTURE

The Japanese tend to regard Okinawans as rather uncouth hillbillies. The islanders, however, still retain their Ryukyuan speech, and feel that their own blend of Chinese, Japanese and Malayan culture is quite proper. Shintoism and Japanese military fanaticism apparently did not enjoy as great a vogue in Okinawa Prefecture as in Japan proper. Certainly, the Okinawans were quite amenable to United States rule once they had discovered how false was the cruel picture of Americans given them by the Japanese propagandists. Altho there were some Protestant Christian, Buddhist, and Shinto religious buildings on the island, the people in general remained animists, worshipping the spirits of the mountains, the sea, fire, trees, tea, and the goddess of weaving. Local priestesses and sorcerers served as intermediaries. Various festivals were held on traditional days during the lunar year to honor the spirits and the crops.

Unlike the Japanese, the Okinawans bury their dead in coffins. These are placed, with the corpse in fetal position, in family vaults which dot the landscape. Altho there are probably no two alike, the tombs all follow the same pattern. They have a low-walled yard in front, behind which there is a tiny entrance thru a stone wall into a chamber dug into the hillside. This is roofed with stone in the symbolic shape of Mother Earth's womb, and is generally in accord with the slope of the hill. Death is accepted as a very natural event, and the tombs are placed along the roads or in the fields in quite visible and accessible locations. After several years have passed, the skeleton is removed from the coffin and cleaned of its fleshly remains by a virgin. The bones are then placed in urns on an altar in the tomb in accordance with prescribed tradition. The burial process is then considered complete. The individual has become part of the long line of family ancestors venerated by each Okinawan. Some servicemen found the mausoleums quite useful during both battles and typhoons.

In governmental matters, Okinawa was merely a distant and unimportant prefecture of the Empire, with the usual omnipotent police, authoritarian schools, and strictly controlled associations

for this, that, and the other activity, designed to keep the population loyally and obediently busy in accordance with the Imperial wishes, just as in the home islands of Japan proper.

Most Okinawans are farmers and display the same peculiar occupance, so difficult for westerners to visualize, which occurs frequently in the Far East. One thousand or more persons per square mile live within a rural economy! The *average* farm is no larger than two acres, and this small plot must raise enough food for the family which cultivates (and perhaps owns) it, and furnish some surplus produce besides.

Terracing is not seen in its extreme Philippine or Peruvian form on Okinawa Shima. The central portion of the island, consisting for the most part of plateaus and ridges, has few terraced fields. The valleys in Motobu and vicinity are well terraced. Southern Okinawa is terraced wherever the landform permits. Wherever hillsides are terraced, the run-off is often not permitted to form brooks and rivulets. It drains slowly from field to field, passing thru compost sills to minimize soil erosion. At the foot of the hills, the water will often irrigate many rice paddies before it drains into the sea thru wooden sea gates, so constructed as to allow the field water out without allowing the sea water in. During the fierce battles of the invasion, the sea walls and gates were damaged, so that salt water has covered many paddies. The sea walls are constructed of sexagonal stone block facing, of the same type as some of the ancient ruined forts in the interior of the island. The walls slope slightly from the vertical so that the base of the dyke is of greater width than the top. The sea wall is backed by approximately six feet of earth, topped with stone or cement, and has stone or earth facing the low fields immediately behind the wall. The low-lying paddies were utilized to the utmost, with only the narrowest of dry footpaths and drainage ditches between them. For generations the sea walls provided the peaceful, provincial Okinawan farmer with more arable land than Nature originally offered. Many repairs of wartime damage will be necessary in order to restore these to their former usefulness and to preserve the roads which run along the sea walls wherever the hills reach the shoreline.

DIET AND CROPS

The staple food for Okinawans is the sweet potato. Those who can afford it, vary this with rice. Various vegetables, fish and pork can be eaten occasionally. Only the well-to-do, such as the

local governmental bureaucracy, the merchants, the sugar-mill owners and the like, enjoy anything approaching the possible variety of an Oriental cuisine. The leading crops, in addition to sweet potatoes and rice, are sugar cane, soy and other bean crops, millet, barley, silk mulberry, and squashes. Much of the sugarmill equipment was of American manufacture. All of the mills observed by the writer were ruined during the course of the American military invasion.

RURAL VILLAGES

The Okinawan farm family lives in a hut which, clustering near its neighbors, forms the typical rural village. The roof is normally of tile (usually the red tile which so delights the esthetic Japanese antiquarian), but on the houses of the poor, the roof may be of thatch. The hut itself is generally oblong in shape, and in its rudest form consists merely of a thatched roof set upon four stone corner posts, with a dirt floor, a crude central fireplace without a chimney, a doorless portal and paneless windows. A flimsy partition serves to confine the goats or pigs to one end of the hut. The mild climate permits this crude dwelling to suffice. Farther up the social ladder, red tile supplants thatch, and wooden planks cover the dirt floor. A prosperous villager sometimes has polished wooden floors, thin panelled walls, and perhaps a crude chimney. The really well-to-do have villas with spacious walled courtyards, large cisterns to catch rainwater, and all the traditional appurtenances of a Japanese household. Trees and shrubs always surround the houses, giving them a rural and colorful aspect. In most villages, narrow, crooked alleys meander thru the clustered huts, and only the main street is recognizable as a street in width, straightness and paving. In the vicinity of Motobu, however, some of the villages are more orderly in the arrangement of the huts, and trees are trained to grow in special decorative shapes.

TOWNS

Itoman, one of the few hut-clusters which was not a farm village, had a pre-war population of circa 9,000. It was the chief fishing village of Okinawa, situated on the west coast not far south of Naha. It is located at the junction of the shore road and a road which descends from the hills, just north of a creek mouth where fishing vessels can come to shore despite the coral flats. Immediately to the north of the road junction is a rocky hill given over to tombs. The northern slope of this hill, at the northern entrance to the town, is the site of a large temple, set among huge and

imposing rocks. This was no doubt a very impressive shrine before souvenir hunters despoiled it, with its walls of white tile with black inscriptions, its carved stone lanterns, its plaques, bells, and characteristic Japanese entrance. The hilly site of Itoman was roughly bowl-shaped, and the crowded huts of the town climb the hillsides. Not as badly damaged as many of the towns of southern Okinawa, it was one of the first to be repopulated in December of 1945 under the direction of American military government authorities.*

Naha, the sole export and import town, once gave shelter and livelihood to 34,000 people. For centuries it stood unravaged on one of the nautical by-paths of the world. After the battle of Okinawa, however, one could count on one's fingers the number of gutted buildings still standing. Acres of huts and buildings were actually pulverized. Naha is situated at the mouth of a large lake-like inlet, where the coral flats do not interfere too greatly with commercial traffic. Roads lead from the city to all portions of densely populated southern Okinawa. A canal was dug thru the heart of the city many years ago from the harbor proper, on the southwest, to Asatogawa, on the north of the city.⁵ A small island southeast of the harbor, containing a park of trees and temples, added color to the port. Suburbs of Naha climbed hills to the north and south of the city. An extensive Okinawan cemetery lay to the north, as well as a small plot of hallowed ground on the seashore, where some unfortunate English, French and American sailors of the two previous centuries, including some of Commodore Perry's men, lay beneath large blocks of stone which were appropriately inscribed.

The ancient, provincial, bustling glory which was Naha—its banks, its crowded markets, warehouses, docks, temples, geisha houses, schools and theaters—all was, actually and completely, dust. From this port, in peacetime, many thousands of Okinawans had left for other lands because the pressure of the population upon the land was great. In order of numbers, Japan, the Marianas, Hawaii, Brazil, Peru and the Philippines were the recipients of these immigrants. From Naha port Okinawa had sent cane sugar, molasses, panama hats, silk, sweet potato brandy, red lacquer ware and textiles to oversea customers. Thru Naha port had come rice from Siam and Formosa, soya, wheat and vegetable oils from

*General Simon Bolivar Buckner met his death not far from Itoman.

⁵"Gawa" is Japanese for "river."

Manchuria, tea from China, manufactured goods and the impedimenta of government from Japan.

Three miles to the east and slightly north of Naha, among the hills forming the island's "backbone," and with a fine view of the port and its once-populous vicinity, is the site of Shuri. It once contained a population of 19,000. A narrow, twisting, typically Japanese road connected it with Naha. Another, more circuitous route, led approximately four miles to the much smaller port of Yonabaru, on the east coast, facing Buckner Bay.⁶ Between two steep crags, a third road led to the farmlands of the plateau north of Shuri. Here, at Shuri, had been the center of Okinawan civilization—the depository of its relics, the site of the royal palace and the homes of the insular nobility—the center of its cultural life as well as the foremost town in the manufacture of red lacquer ware and brandy, rarely endangered during all the long centuries of its existence by any extra-insular developments. As a reminder of its former importance, a large and completely gutted concrete building on the town's western edge stood ready to collapse; a lone skull rested, barren and grim, on an ancient battlement to the south, where oft in feudal days the local lords had defended their lofty site against rival clans; and near the eastern approaches, a badly battered church still raised its concrete cross above the rubbish. The hilly terrain gave an added wildness to the confused wreckage that once was Shuri, where now the blackened embers of scattered trees rise above the shattered remains of innumerable houses and the many streets and alleys which, except in four or five instances, are covered with rubble or blasted away. Vesuvius treated Pompeii much more generously than did American artillery this little city.

HISTORICAL BACKGROUNDS

Okinawa is so situated that it is normally a stepping-stone to nowhere. Some 400 miles to the west, Chinese ports trade busily with each other. To the east, an ocean extends as an almost uninterrupted and uneconomic expanse of water for more than 5,000 miles. The islands were commercially important only once in their history. For circa two centuries after 1636, trade was prohibited between the proud and mighty Empire of Japan and the equally proud and mighty Empire of China. The merchant-princes of Satsuma then utilized Okinawa, politically and geographically

⁶ "Buckner Bay" is the American name of this island-studded body of water. Officially, it is Nagakusuku Wan. "Gusuku" means "castle"; "Wan" means "bay."

peripheral to both powers, as their trading base. Europeans, also banned from Nippon, could land at Naha. The claim of these princes to sovereignty over Okinawa rested upon a legendary Japanese prince who established his rule there in 1187, after running away from home. Chinese claims date from 1372, when tribute was first paid by the Okinawan Court to the Chinese Court. The Chinese had fitfully tried to establish ownership of the Okinawa Retto since 610 A.D.⁷

For the most part, the Okinawans seem to have been ruled by their own feudal lords during almost all of their history. Often, one lord would rule the entire island, and some of them even extended their sway to neighboring island groups. When Chinese influence was at its height, the court considered itself Confucian. Naha contained many Chinese merchants at that time, and sent many of its sons to China to be educated. Largely thru the efforts of the princes of Satsuma, the Japanese gained the ascendancy in the seventeenth century, but for a long time thereafter, Okinawa remained, in a cultural sense, a province of China. The Emperor of China did not yield his claims to sovereignty until 1895. By then, the Japanese had extinguished Okinawan autonomy and had absorbed it into the Empire as a prefecture. In 1945, however, Japanese rule came to an abrupt end. For the first time in its history, the island was on a direct route to an important objective. It paid a severe price because of that: in population dislocation and death, destruction of villages and cities, and complete disruption of its economy. The price was lessened by the nature of the American military government, which was better than the Japanese.

CONCLUSION

Precisely what effect American rule will have on the customs and beliefs of these islanders, and on their political and technological level of development, remains to be seen. Whether an island as densely overpopulated as Okinawa can afford to have portions of its farmland given over to airstrips, roads, bivouac and warehouse installations, and other institutions of a bulky American variety, is also problematical. Certainly, one moral stands out pre-eminently—no matter how secure, insignificant, and isolated a hamlet may be, it faces almost complete, and certainly instantaneous, destruction if its geographical location chances to place it athwart the path of modern warfare.

⁷ "Retto" is Japanese for "island group."

TEN YEARS OF HIGH SCHOOL METEOROLOGY

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The administration of the Albuquerque High School felt the need of added emphasis on courses which dealt with the aeroplane. They felt this need far back in the early 1930's even in the hard depression years when the aviation industry was making a valiant struggle but gaining practically no ground. In those days there were many serious people who proposed that the schools concentrate on the arts and skills of living as pleasantly as possible in a controlled and regimented life. The teaching of science and mathematics was losing ground, and many people figured that these subjects demanded too much, and prepared you only for opportunities which were gone with past prosperity, never to come again. The schools were fighting to keep parts of their curriculum alive, hoping and believing that better times would come. It was a bad time for the administrator who believed that sometime soon the world would inevitably demand trained men and women. Such dreams included the expenditure of money and money was scarce in 1936.

The Albuquerque High School program had begun with courses in aircraft mechanics. In 1936 courses in air navigation and meteorology were proposed. Suitable textbooks for the two courses were not available and it was necessary for us to prepare our own material. The books were mimeographed and the writer remembers well the difficulties in getting necessary funds for the job.

Now we are looking back on ten years' work in these courses which were once so difficult to justify but that turned out to be such a fortunate "shot in the dark." The course of air navigation is a rather specialized one but the same is not true of the meteorology course which precedes it. This more general course will be the object of the discussion here, and the writer wishes to present certain problems which might be of interest to teachers who work in this field.

First of all a course must be justified before it is included in the school curriculum. Meteorology is the most common of all topics for American conversation and yet the science about which the least is known by the general public. From a cultural point of view, alone, the study of the subject would be deemed justified.

Weather and climate as determining factors for every day life thruout the world suggest that these factors be given added importance in the studies of history and economics. The studies of weather and climate can be expanded to take in the important subjects of government and political, social, and economic geography, subjects which are probably not included in the school curriculum. People in many walks of life are directly dependent on the daily weather reports and more people should be educated to take advantage of the Government services offered. People engaged in the aviation industries are dependent upon meteorology as a basic study. Such reasons are a few which can be advocated for including the study in a school curriculum.

The new study had to be fitted into the school curriculum which was already crowded. This did not offer much trouble as the course in meteorology (and air navigation which followed it) were assigned to the Science Department as electives for either grade eleven or twelve. The courses could also be counted as vocational training for the students who specialized in aircraft mechanics and who wished to work for a vocational diploma.

The course in meteorology did not require a great deal of expensive equipment. We have a complete set of world maps and two large globes. We have some meteorological charts, two large atlases, and a set of the Encyclopedia Britannica in our classroom. From the United States Weather Bureau we have considerable material including several types of weather maps, climatic summary data, cloud charts, and special maps which deal with the movements of "fronts." For experiments we have the full run of a well equipped physics laboratory. Downstairs in the aeronautics shop we have access to numerous aircraft instruments which are studied. From past contacts as a teacher with the C.A.A. during the War the writer has considerable material, including some examinations given to Air Corps flyers. The local Civil Air Patrol has been helpful and the same is true of the local Weather Bureau. Our students have access to the Albuquerque High School library and in addition to the libraries of the City, the University of New Mexico, and the United States Soil Conservation Service.

Our textbook was written specifically for us and for our problems but we do not aim to be slaves to it. The text serves as the general outline of the course but every effort is made to correlate the daily activities with the happenings of the times. The instructor seeks to send out each student as a seeker of information which

will apply to the course being studied. The class, in part, acts as a clearing house for information brought in from many sources. The writer has taught graduate students in college, service men in officers training, adult trade apprentices, and high school upper classmen and he finds that a great many of these high school students are as capable of doing a good research job as their elders. Use is made of these willing and capable students who are sent in the pursuit of knowledge. It is an education for them and for the class in which they report their findings.

The instructor uses a point grading system and our classroom work includes: (1) laboratory experiments, (2) work on weather maps, (3) working of problems, (4) discussion of questions in the text, (5) topics for independent research and report to class, (6) viewing and discussing motion pictures and slides, (7) directed study, and (8) examinations. The instructor is naturally desirous of full student participation. Since the class is an elective one it receives many students who are really interested in learning. It also receives a number who are interested only in obtaining a half credit of school work. The person who most often seeks the half credit is generally the chronic "flunker" and the entrance of that person is not sought in the class. We seek the person who wishes to take meteorology for one semester and air navigation the next semester as a continuing course. The chronic drifter is often discouraged by knowing the course is on the difficult side and that once in it he will have to do the work "or else." The course is not designed just as a pleasant interlude for some future hobo. Students have gone from this course to become Army meteorologists and pilots. One was an Army major and an air ace. In December 1946 Admiral Denfield of the United States Navy gave us an official commendation for pioneering these courses. Part of our course procedure comes from suggestions which our former students, now workers in the field, have given us. Accordingly we insist on a fair standard of performance on the part of the student. This is known and the chronic searcher for the easy way generally passes us by.

Some of the classroom procedures listed in the preceding paragraph will be taken up in some detail.

LABORATORY EXPERIMENTS

In our work thruout the semester we do a number of experiments. With a spotlight and a large globe we illustrate the seasons of the year, the solstices, and the equinoxes. By an exposure meter

we show how the inclination of the light rays govern the amount of radiant energy received in different zones in different seasons. We make a crude inverted thermometer of the Galilean type. Students learn to read thermometers correctly and to change Fahrenheit readings to Centigrade and vice versa. Weight of air is determined by analytical balance. Instruction is given in the reading of the barometer and students practice reading it and keeping a record for several weeks. Various experiments with air pump, bell jars, and Magdeburg hemispheres bring out the air pressure relationships. Altitude variations are determined by use of an aneroid barometer and a salvaged altimeter. "Analysis" of air is carried on by extracting the oxygen by means of wet steel wool, phosphorus, or pyrogalllic acid. By use of sulphuric acid the absolute humidity of a measured quantity of air is determined. Relative humidity is determined by use of the dew point apparatus and by the sling psychrometer. A home made cloud chamber is constructed. A Cottrell precipitator is made and used to settle out smoke. Radiant energy is measured by the foot-candle meter and checked, roughly, by a radiometer. A crude anemometer is constructed and tested in a breeze supplied by an electric fan. This same fan is used to supply the air for our home-made wind tunnel in which we test a few air foils. Our static machine supplies the central piece of apparatus for demonstrations in atmospheric electricity, lightning, and the use of lightning rods. On occasions we have determined the specific heats of soils, the heat of fusion of ice, and the heat of vaporization of water. In our experiments we rely heavily on the apparatus to be found in the physics laboratory. Often, also, the instructor presents the idea of a piece of apparatus to be used and the interested students will go about constructing some set-up which will do the job properly. The set-ups are often crude but the instructor feels that these crude makeshifts, which are the group's own, are often better as teaching devices than apparatus especially designed for the purpose. There is also the factor of economy which must be kept in mind.

WORK ON MAPS

Our discussions and classroom work often deals with maps and charts. During the course we make a rainfall map of the United States and of our own State. From Weather Bureau statistics we construct wind rose diagrams for several cities. Students draw up a general chart of the world wind system and show how the land

masses act as modifying factors. A regular series of practice maps obtained several years ago from the Weather Bureau and the C.A.A. Navy Pilot Training service furnish us with opportunities to draw in isotherms and isobars and obtain a certain facility in interpreting the station model. Other duplicate maps of six day weather sequences offer us opportunity to trace movements of lows across the United States. Weather Bureau code tape is obtained and the records translated into station models.

WORKING OF PROBLEMS

The higher mathematics approach to the study of meteorology cannot be defended for high school students and such an approach is not attempted. The problems we deal with can be worked by arithmetic, algebra, and geometry. Centigrade thermometer readings are changed to Fahrenheit and vice versa. Pressure is converted to altitude and altitude back to air pressure. From air temperature and dew point we figure cloud heights and from cloud heights and air temperature we figure relative humidity. Problems on relative humidity as determined by wet and dry bulb thermometers and by dew point apparatus are taken up in some detail. Force of air on different surfaces at various velocities is presented. From angle sights on clouds the cloud height is determined graphically.

DISCUSSION OF QUESTIONS AND TOPICS FOR INVESTIGATION

The textbook used contains a large number of questions at the end of each chapter. These questions act as a starting point for classroom discussion. All class members are encouraged to enter into the discussion. Occasionally the instructor will give a quiz of a few questions to start the lesson out. This is used as a means of increasing student participation in the discussion and also as a means of ascertaining who is reading the assignments. Students are urged to bring up relevant questions for mutual consideration.

Special topics related to the chapters in the textbook are assigned to volunteers. These volunteers consult various sources to find material on their topic. These assignments are given out several days in advance and at a given time the volunteer is to present his findings to the class in an oral report. Special "point" inducements are provided for encouragement of the students who wish to look up these subjects. Some very good jobs of research are done by the students and such assignments are provided to encourage this sort of work. The subjects dealt with in this research are chosen

especially to show how the weather and climate have ramifications which reach into all phases of human life. In the next few paragraphs the writer will present the chapter headings in the textbook. Each chapter is followed by from six to thirty topics for independent research and discussion and also by a large number of questions on the subject matter of the textbook. The text's chapter headings are:

The Introduction. Chiefly an historical sketch of the progress of weather study from the past to the present.

Chapter I. The Atmosphere.

Chapter II. Heating and Cooling of the Atmosphere.

Chapter III. Variation of Atmospheric Pressure.

Chapter IV. Water Vapor in the Atmosphere.

Chapter V. Rain, Snow, and Hail.

Chapter V. Relationship Between Air Pressure and Wind. The General Wind System of the Earth.

Chapter VII. Secondary Wind Systems and the Storms.

Chapter VIII. Making the Weather Map.

Chapter IX. Forecasting the Weather.

Chapter X. World Weather or Climate.

Chapter XI. Miscellaneous Weather Phenomena.

Chapter XII. Climates of the Past.

Chapter XIII. Weather for the Aviator.

Chapter XIV. Meteorology for Everyone.

It has not been thought advisable to list the many research topics which we take up under these chapter headings. If in our selection of the topics we seem to journey far afield it is for a definite reason. We feel that the study of weather and climate is a basic part of an individual's understanding of history, economics, and sociology. We feel that the geographic factor is one of the most powerful influences in shaping the peoples and the customs of the world and a knowledge of basic geography, and the effect of climate on it, should be a part of any science curriculum.

MOTION PICTURES AND SLIDES

Slides and motion pictures can show many things which are difficult to present in other fashions. We can obtain some training films directly from the local Army Air Base. Some come from the C.A.A. and some from the C.A.P. A good many teaching films are put out by various companies such as the Erpi Films. Our school has a large room set aside for the purpose of showing films and slides only and our director of visual education has been very helpful in obtaining material for us.

DIRECTED STUDY AND EXAMINATIONS

There are times when we are working on maps or on problems and this work is conducted under supervision. There is nothing unconventional in our approach to this sort of work. The same is true of our examinations which are given thruout the course. At the end of the course several examinations from the C.A.A. or the Army Training Program are given and a large percentage of our students pass these tests successfully.

CONCLUSIONS

At the present writing we are entering our eleventh year for our course in meteorology. During the World War we were lauded for such teaching because it had so much direct bearing on the training of aviators. We were even commended for looking into the future and divining the Nation's needs five years in advance. We did not see into the future any more than did our political leaders. We felt that a course in meteorology would be helpful regardless of what trade or profession a student chose to enter. We still believe so. For some the training in meteorology will undoubtedly be helpful in aviation work but we realized at the beginning that few of our students would follow this as a profession. We feel that the course must be justified on the grounds of being a broad basis for the understanding of world civilization. If this makes it a study of weather and climate and their bearing on the past, present and future rather than the strict application of weather to the aviator alone, then we feel that our course is worth while. We feel that such a course should be continued as a basic part of our understanding of world peoples and cultures.

FILMS AND REFERENCES

The following films are currently listed for showing in our course:

Aerodynamics. 1 reel. Erpi Film. University of Wisconsin.

Jet Propulsion. 2 Reels. General Electric Co.

Tidal Theory of the Earth and Moon Creation. Pathe Company. Walter and Gutlohn.

Earth and Its Seasons. 1 Reel. Erpi Co. University of Wisconsin.

Aerology. Thunderstorms. 4 Reels. U. S. Navy film.

The Atmosphere and Its Circulation. 1 Reel. Erpi Company. University of California.

The Weather. 1 Reel. Erpi Company. University of California.

Modern Weather Theory. 2 Reels. U. S. Army Air Forces.

Development and Characteristics of Atmospheric Waves. 1 Reel. U. S. Army Air Forces.

All the films we use are 16 millimeter in sound. Our best film strips are obtained locally from the Civil Aeronautics Authority. The Jam Handy Company of New York also has several film strips which we use on a rental basis.

In addition to a set of encyclopedias and several atlases we have the following books and pamphlets available in the classroom:

- Arnold and Eaker. *The Army Flyer*. Harper and Brothers 1942.
Arnold and Eaker. *This Flying Game*. Funk and Wagnall 1935.
Arnold and Eaker. *Winged Warfare*. Harper and Brothers 1941.
Beauchamp and others. *Learning About Weather*. Scott Foresman 1945.
Becker. *Einführung In Die Astronomie*. German Army Standard 1943.
Bowden. *Study Guide for Meteorology*. Civil Pilot Training Publishing Co. Stockton, California, 1943.
Brands. *Meteorology*. McGraw-Hill Co. 1944.
Buck. *Sparring with the Weather*. Aero Insurance Underwriters Company 1944.
Case and Bergsmark. *Modern World Geography*. Lippincott 1936.
Caudle. *Workbook in Elementary Meteorology*. McGraw-Hill 1945.
Cave. *Clouds*. Cambridge Press 1926.
Christofferson. *Demonstrations and Laboratory Experiments in the Science of Aeronautics*. McGraw-Hill 1945.
Civil Aeronautics Authority: (List follows)
 Bulletin 20. Study Outline for Primary Ground School 1939.
 Bulletin 22. Digest of Civil Air Regulations 1942.
 Bulletin 25. Meteorology for Pilots 1940.
 Bulletin 26. Aerodynamics for Pilots 1940.
 Bulletin 27. Pilots Airplane Manual 1940.
 Bulletin 29. Pilots Radio Manual 1940.
Clevenger. *Modern Flight*. Noble and Noble Co. 1941.
Cohen. *Flying High*. Macmillan 1940.
Cross. *Wings for You*. Macmillan 1942.
Davis. *Elementary Meteorology*. Ginn and Co. (Old book but good.)
Denoyer. *Teacher's Manual for Cartocraft Globes*. Denoyer-Geppert Co. 1936.
Dorrah. *Certain Hydrological and Climatic Characteristics of the Southwest*. University of New Mexico Press 1946.
Field and Stetson. *Map Reading and Avigation*. Van Nostrand 1942.
Finch and others. *Elements of Meteorology*. McGraw-Hill 1942.
Finch and others. *The Earth and Its Resources*. McGraw-Hill 1943.
Fiske. *Exploring the Upper Atmosphere*. Oxford Press 1934.
Floherty. *Aviation from Shop to Sky*. Lippincott 1941.
Frances. *Aviation*. Bobbs-Merrill 1943.
Free and Hoke. *Weather*. McBride Co. 1928.
Gilbert. *Weather Bureau*. A. C. Gilbert Co. 1920.
Halpine. *A Pilot's Meteorology*. Van Nostrand 1943.
Harrington. *Elements of Air Navigation*. Albuquerque High School Publication, 3d. Edition, 1946.
Harrington. *Meteorology*. Albuquerque High School Publication. 3d Edition, 1947.
Hartsma. *Handbook of Aeronautical Occupations*. Zealand Record Company 1939.
Humphreys. *Fog and Clouds*. Williams and Wilkins 1926.
Humphreys. *Rainmakers and Other Weather Vagaries*. Williams and Wilkins 1926.
Humphreys. *Ways of the Weather*. Jacques Cattell 1942.
Huntington and Visser. *Climatic Changes*. Yale Press 1922.
Huntington. *Mainsprings of Civilization*. Wiley 1946.
Huntington. *Principles of Human Geography*. Wiley 1934.

- Kraght. *Meteorology Work Book With Problems*. Cornell Maritime Press 1943.
- Ley. *Rockets*. Viking Press 1945.
- Leyson. *Wings for Defense*. E. P. Dutton 1942.
- Link Aviation Devices Co. *Teachers Guide* 1946.
- McGraw-Hill. Special texts for pilot training for U.S. Navy:
Principles of Flying 1943.
Aerology for Pilots 1943.
Air Navigation Parts 1, 2, 3, 4, 5, 6, and 7, 1943.
- Milham. *Meteorology*. Wiley 1934.
- Modern Aeronautics Activity Texts. American Educational Press 1943:
Number 1: Aerodynamics.
Number 2: Navigation.
Number 3: Aircraft Structures and Power Plants.
Number 4: Meteorology.
- Molloy. *Aeroplane Instruments*. Chemical Publishing Co. 1940.
- Naidich. *Mathematics for the Aviation Trades*. McGraw-Hill 1942.
- Noth. *Wetterkunde Für Flieger*. German Army Standard 1939.
- Oxford Book Company. *Introduction to Aeronautics* 1944. Author not listed.
- Petterson. *Introduction to Meteorology*. McGraw-Hill 1941.
- Pickwell. *Weather*. Hugh F. Newman Co. 1937.
- Page. *A B C's of Aviation*. Henley Company 1942.
- Pope and Otis. *Elements of Aeronautics*. World Book Co. 1942.
- Potter and Konicek. *Fundamentals of Aviation*. Link Aviation Co. 1946.
- Shields. *Meteorology and Air Navigation*. McGraw-Hill 1942.
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INDONESIA: LAND OF PROMISE

MERNA IRENE FLETCHER

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Indonesia is a land of islands laid out on a grand scale. The Netherlands East Indies, which aspires soon to become an independent republic, includes 3,000 islands with a total area approximately one-fourth that of the United States. From the westernmost tip of Sumatra at Sabang to Meranke on New Guinea, the easternmost limit of Dutch rule, is a distance of 3,100 miles or about the distance from New York to San Francisco. Between these two points one finds countless towns, villages, and cities, many miles of seas, straits, gulfs, and inlets, many miles of trackless jungle, and many more miles of unexplored country. The four major islands of Sumatra, Java, Borneo, and the Celebes together with some adjacent smaller islands are referred to as the Greater Sunda Islands, and make up the greater portion of the land area. East of Java the chain of six large and many smaller islands, which include Bali, Lombok, Timor, etc., is called the Lesser Sunda Islands. In a northerly direction from these lie the Moluccas, Halmahera and Ceram, which are commonly called the Spice Islands.

RESULTS OF LOCATION

The Indonesian Islands lie along the equator between the mainland of Asia and Australia. Because of this fact the variety of

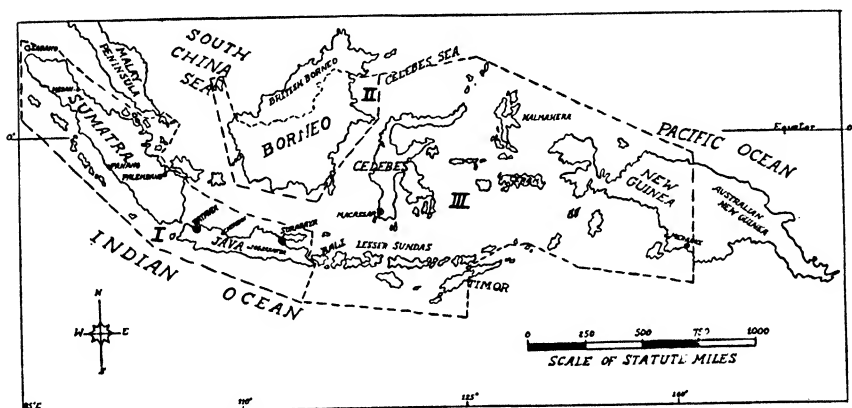
TABLE I
AREA AND POPULATION*

Island	Area	Total Population	Per Sq. Mi.
Java and Madura	51,480 sq. mi.	50,000,000	936
Sumatra	184,850 " "	8,900,000	53.2
Borneo	210,600 " "	2,500,000	11.1
Celebes	72,680 " "	4,500,000	58
Molucca Islands	30,168 " "	2,225,000	67
Entire Archipelago	773,912 " "	72,000,000	95.4

* 1945 estimate

living things from elephants and orangutans to unique orchids and flowers have been and still are infinite. In Java in the 1890's was discovered the fossil remains of the now famous "Java Ape Man." Also because of this location the islands are a melting pot for

several races of which the Malay predominates today. At present more than 70,000,000 people, belonging to 250 or more racial and language groups, live in the islands and about 47,000,000 of these are on the island of Java alone. This makes Java the most densely populated island in the entire world, with about 950 persons per square mile (Table I). Recurrent volcanic eruptions thru the past ages have produced the rich volcanic soil of Java which the almost entirely agricultural population has made one of the world's greatest agricultural producing areas. The agricultural value of the other islands is second only to that of Java. However, in general,



Parts of the United States of Indonesia as proposed in the Linggadjati Draft Agreement:
I. The Republic—Java, Sumatra, Madura. II. Borneo. III. East Indonesia.

the modern world is more interested in their rubber and mineral wealth than in the agricultural products.

Here in these islands is the land of spices, sugar, and tea; the land of precious stones, gold and valuable minerals; and for modern civilization, particularly, the land of rubber and oil. The natural resources of these islands are among the greatest in the world (Table IV).

HISTORICAL BACKGROUND

The Portuguese were the first Europeans to arrive in the islands. But fifth century Hindu Temples in Java and widespread Mohammedanism and Buddhism give evidence of early Indian incursions. Later the infiltration of Arab traders and settlers in the 12th and 13th centuries permanently affected the religious and cultural life of the islands (Table III). In 1509 a Portuguese expedition

arrived in Sumatra, and in 1511 a Portuguese trading center was established at Ternate in the Moluccas. The eastern part of the island Timor is a remnant of their early holdings in this part of the world. The Spanish followed the Portuguese and bitter rivalry maintained until Spain annexed Portugal in 1580. The first Dutch

TABLE II
PRINCIPAL RACIAL AND LANGUAGE GROUPS*

Javanese	mainly Central Java	30,000,000
Sudanese	Western Java	10,000,000
Madurese	Madura and Eastern Java	5,000,000
Balinese	Island of Bali	2,000,000
Alorese	Islands of Alor, Timor, etc.	4,000,000
Papuan	Western New Guinea	1,000,000
Redjang-Lampung	Southern Sumatra	1,000,000
Minangkrbau and Batak	Central Sumatra	2,000,000
Atchinese	Northwestern Sumatra	1,000,000
Malay	Eastern Sumatra, etc.	4,000,000
Dyaks	Borneo	3,000,000
Toradja	Northern Celebes	1,000,000
Macassarese and Buginese	Southern and Central Celebes	3,000,000
Minahasa	Northeastern Celebes	1,000,000
Chinese	throughout Archipelago	1,250,000

* Netherlands Information Bureau 1946

TABLE III
RELIGIONS (ESTIMATED ADHERENTS)

Mohammedan	55,000,000
Christian	2,500,000
Hindu	1,500,000
Buddhist	1,000,000
Animist	10,000,000

appeared among the islands in 1527 and Sir Francis Drake sailed thru these waters in 1579. The first Dutch fleet of consequence reached Sumatra in 1596 after a voyage of a year and three months. Soon several Dutch companies were engaged in fierce trade competition with the Portuguese who were well-established in the Spice Islands.

DUTCH POLICY

In 1602 the Dutch East India Company was formed to meet the competition of the Lisbon Traders and the monopoly of Far Eastern trade was delegated to it. So began Dutch influence in the Far East. They built the city of Batavia on the swampy coastal plains of western Java, plains that closely resemble the polderland

of the mother country. Batavia was built on the border between the two established states found on the islands when the Dutch arrived. Agreements were completed with the government of the empire of Mataram in eastern Java and the Sultanate of Bantam in west Java. Batavia was fortified to withstand frequent raiding parties of the rival nations. (The new Republic has restored the old native name of Djakarta to the city of Batavia.)

In dealing with native princes, from the first the Dutch East India Company had as its paramount objective trade concessions. The princes were allowed to rule independently provided matters of trade were left to the Dutch. This condition as time went on gradually drew the native princes closer and closer to Batavia. Gradually their authority was coordinated with the supreme power of the high government at Batavia. This created greater rest and order and led to intensification of agriculture and trade.

Long ago the Dutch surpassed and practically eliminated the Spanish and Portuguese and by comparison, British island holdings are small and recent. In the three centuries following their arrival the Dutch had difficulties and reverses, but they constantly increased their holdings until they created the Netherlands East Indies Empire which today is seeking independence.

The so-called culture system was introduced into Java in the 1830's by which Java's exploitation was taken over by the State. The government of the Netherlands East Indies became a gigantic agricultural enterprise and Batavia became the rural capital of a plantation colony.

By 1848 the Netherlands began to respect the human rights of the Javanese. A period of liberalism followed, bringing a line of social and hygienic measures and expanding popular education, which extends to the present era. This same period introduced the "Open-Door Policy" for private enterprise which led to colossal economic prosperity in the isles. At the time of the Japanese invasion of the islands, education was spreading rapidly. Social legislation provided for regulated working hours, prohibited child labor, provided insurance, minimum wages, etc. for a growing mass of workers. Prices had been stabilized. Cooperatives were spreading. A class of economically enterprising Indonesians was developing (Table V).

Since 1912 the finances of the islands have been legally separated from those of the Netherlands, but Holland has assisted them with government loans, grants, etc. Netherlanders have had to pay

the same immigration fees and take out the same papers as other foreigners entering or settling in Indonesia.

As for the land, the rights of the native inhabitants have been strongly protected in fact since 1830 and by law since 1870. No non-Indonesian can acquire lands from natives except in very limited amounts for building sites near cities. Non-cultivated lands, where there are no Indonesian rights, may only be leased for a limited number of years for agricultural purposes and are subject to explicit legal conditions. Practically all the arable land is owned

TABLE IV
PRINCIPAL PRODUCTS EXPORTED 1939

Product	Total Export Tons	Percentage Produced under	Percentage Produced by	Percentage World Export
		A. or E. manage.*	Native Growers	
Oil	7,036,348	100	—	2.8
Tin	38,757	100	—	17.0
Rubber	379,101	51	49	37.0
Sugar	1,582,434	99	1	6.0
Quinine	6,394	100	—	91.0
Pepper	69,979	—	100	86.0
Kapok	11,144	27	63	72.0
Tea	73,541	82	18	19.0
Coffee	65,411	33	67	4.0
Copra	528,981	5	95	27.0

*A—American E—European

and cultivated by natives. Of the 33,000,000 acres of cultivated land in Java no more than 2,500,000 acres, which is leased for 75 years from the government, is occupied by western agriculturalists growing tea, coffee, rubber and the like. Shortly after 1800 all the great holdings with seignorial rights were sold to private individuals. These lands have since been completely expropriated and tenants on them were made owners of their farms, thus doing away with a major cause of agrarian unrest.

The use of Malay as a common language between different Indonesian groups and also between them and citizens of Dutch and foreign origin has been maintained. Twenty-five main languages and numerous minor ones are spoken (Table II). The Dutch language serves to aid in adapting the country to modern requirements. This conservation of native property, native customary law, and native languages, was a development indispensable in the equipping of a country for self-government.

RESOURCES

Before World War II, the Netherlands Indies had already attained an important place in the world because of their great wealth of raw materials. Three of those materials which are always associated with the Indies are quinine, tin, and rubber. Previous to the war, 90 per cent of the world's cinchona bark, source of quinine, came from Java and Sumatra. In 1940, 40 per cent of the world's rubber supply, and 65 per cent of the tin, was from the

TABLE V
INDONESIAN CAPITAL INVESTMENTS IN AGRICULTURE AND INDUSTRY

	1940
	Million Guilders*
Copra (coconut plantations)	130
Rubber	390
Coffee	75
Tea	25
Miscellaneous Agriculture	80
Industry	100
Transportation	approx. 65
Cattle, fisheries	approx. 35
Total Investments	900

* Dutch gold monetary unit, equal at par to 40.2 cents

Netherlands East Indies; and it exported, in addition, such important tropical products as sugar, kapok, copra, fibers, tapioca, tobacco, coffee, tea, and spices. The world depends on the Spice Islands for black and white pepper (85 per cent produced here) and nutmeg (75 per cent). Other spices exported are cloves, vanilla, cinnamon, and ginger. The islands are first in tapioca production (Tables IV and IX).

Besides these agricultural products, the islands are rich in mineral resources. Petroleum is produced on Sumatra, Borneo, Java, and Ceram; and extensive exploration may disclose fields in New Guinea. Other minerals found include manganese and phosphates on Java; gold and silver on Sumatra, Borneo, and Celebes; diamonds in Borneo; sulphur in Java, Sumatra, and Celebes; and some coal in Borneo and Sumatra. In addition, there are vast, unworked regions with valuable deposits of iron ore, nickel, lead, zinc, and copper, and still vaster regions wholly unexplored.

Their problem is not one of access to raw materials, but of

access to markets. The economic well-being of the islands depends largely upon foreign trade in raw materials.

INDUSTRIALIZATION

Industrialization was begun as a means of increasing the country's self-sufficiency, as a means of coping with the problem of increasing population, and as a means of providing work for people who could no longer find work on large plantations. The

TABLE VI
PRIVATE CAPITAL INVESTMENTS ACCORDING TO ENTERPRISE
1940

	Million Guilders
A. Agriculture	
Sugar	500
Rubber	1,100
Tea	265
Coffee	175
Tobacco	140
Quinine	25
Palm Oil	130
Oil	1,400
B. Industry	
Agricultural Processing	
Industries	500
Other Industries	900
Total	5,400

program was not intended to change the agricultural character of the islands, but to provide supplementary employment (Tables V, VI, and VII).

Manufacturing is confined principally to Java. The long existing native industries have been revived. These include batik work, spinning and weaving, parasol making, ceramics, leather industries, tobacco manufacture, metal crafts, and woodworking. New plants, financed by European and American capital, produce cement, tires, cheap furniture, utensils, tools, electric light bulbs, electric irons, paint, soap, glass, paper, and plywood.

TRANSPORTATION

The gigantic task of binding three thousand islands was the work of the Netherlands East Indies Department of Transport and Waterways which, before the war employed 75,000 persons,

mostly Indonesians (Table VIII). The airplane has been the key to covering great distances. Modern airports dot the islands. Planes fly on the radio beam. One can leave Batavia, fly to Surabaya, 350 miles, and return the same day.

Java has 3,437 miles of railroads. Sumatra has only about one-

TABLE VII
PRIVATE INVESTMENTS ACCORDING TO NATIONALITIES

	Million Guilders
Netherlanders	2,500
Indonesian	900
Indo-Chinese	320
British	450
American	350
French-Belgian	160
German	25
Italian	30
Japanese	35
Other nationalities	600
Total Private Inv.	5,400

TABLE VIII
GOVERNMENT INVESTMENTS (NETHERLANDS) 1940

	Million Guilders
Communications—railways, bridges, telephone, telegraph, etc.	1,350
Public works—harbors, irrigation, roads	1,600
Public buildings	1,200
Miscellaneous	400
Total government investments	4,550

third this amount. Air-conditioned trains between Batavia and Surabaya travel at 65 miles per hour.

The islands have a total of 43,500 miles of roads. Out of this total there are 30,000 miles of hard-surfaced roads, one-fourth of which are asphalted. Again, Java with 13,000 miles of road has the most perfect transport system. But greater engineering feats were required to build the 1,600 miles between the southernmost tip and northern coast of Sumatra. Along the Indies' roads, 21,000,000 people travel each year in buses alone.

In 1937, 165,840 ships entered and cleared Indonesian ports. In normal years three-quarters of a billion dollars worth of goods

leave the Islands thru many large seaports; some of the largest are Surabaya, Tandjong Prioh, seaport for Batavia, and Belawan in northeast Sumatra. Prior to Japanese invasion there were seventeen cities in the islands with a population over 65,000.

THE WAR YEARS

From March, 1942, until V-J Day, the Netherlands East Indies were under some form of Japanese Military Government. The Japanese concentrated on two things: first, to adapt and develop the important industries such as oil to strengthen Japan economically; second, to woo the native people to acceptance of Japanese rule and cooperation with the Japanese. The Japanese failed to comprehend the religious feeling of a mainly Moslem population; they failed to appreciate Indonesian culture and tried to Japanize everything they touched. Some of the most serious features of the occupation were: (1) renewed isolation between major parts of Indies; (2) falling off of education; (3) economic destruction of harbors, workshops, railways, oilfields, etc.; (4) unsettled youth and general disorder; (5) elimination of Dutch influence; (6) incitement of rebellion.

RESTORATION OF INDUSTRIES

Of the total area of 260,000 acres of tea plantations taken over on Java by the Japanese in 1942, some 143,000 were still in operation the middle of 1945. Only about 50 of the 220 tea factories continued in operation thruout the occupation. Tea production on Sumatra in 1944 totaled 6,500,000 pounds and was estimated at one-tenth of the 1941 production. As for rubber, about 43,000 of the 610,000 acres of plantations were uprooted on Java, and about 14 per cent of the 650,000 acres on the East Coast of Sumatra were so treated. 1944 production was about one-fifth that of 1941. Netherlands Borneo rubber exports are expected to surpass the highest pre-war figures within the next few months.

Only one-half of 1 per cent of the 20,000,000 pre-war pepper trees on Bangka Island are still standing, and about 20 per cent in South Borneo remain. Experts estimate that it will take three to four years to rehabilitate pepper culture. Spice culture in the Moluccas, which was completely sacrificed to food production under the Japanese, cannot be restored to pre-war levels in less than eight years.

The lumbering industry has been restored to 70 per cent of

pre-war production from 230,000,000 acres of timberland. Experts believe the industry has great possibilities for further development in Java and Sumatra. The annual cut could be increased more than 10 per cent in the next ten years and two-thirds of it would be available for export.

Signs of recovery are daily becoming more apparent. They are accompanied by indications that the Dutch and Indonesians expect to encourage American capital to help the Indies get back on their

TABLE IX
U.S.A. IMPORTS FROM NETHERLANDS EAST INDIES

Product	Percentage of total American imports
Oil	—
Tin	9.7
Rubber	50.6
Sugar	—
Pepper	96.0
Kapok	91.2
Tea	31.3
Coffee	—
Copra	—

feet. American technicians and thousands of Indonesian laborers are repairing the Palembang refinery and pipe lines. By June they expect to have the refinery back in operation at a capacity slightly less than half of pre-war levels. Oil, because of its rapid comeback, will play an important role in the young Republic's development.

In the tin mines, lack of new equipment is holding back mining. The 1946 production of 22,400,000 pounds was less than one-fourth of the average pre-war output. The most optimistic producers look for normal supplies from their mines by the latter part of 1948.

Copra production is expected to reach 40 per cent of pre-war output by the end of 1947. Tin production for 1947 will be double that of last year's 10,000 pounds. Large stock piles of such agricultural products as sugar, coffee, cocoa, and spices are being massed for export from Central Java.

The Indies have great possibilities for recuperation once internal communications and communications with outside world are fully restored. The essential necessities of life in the Indies are simple and inexpensive. The backbone of the country's reconstruction will be those who withstood Japanese oppression. The great

majority of the people want peace and will help establish it, if given a chance.

STEPS TOWARD INDEPENDENCE

In February, 1941, the Netherlands Government said, "This country has reached a stage of economic growth in which, with assistance of the mother country, it may be deemed capable in the main of adequately developing its own economic life and resources." Others believed that the Indies, in spite of all their rapid progress, were not ripe for complete self-government. They felt that there remained a need for a certain amount of outside guidance and control.

Speaking in San Francisco on May 18, 1945, Dr. Van Mook said: "The Indonesians are not yet a democracy, but they possess characteristics that make them likely to become one. They are tolerant and law abiding; they like to travel and to meet each other. Their country, the consisting of thousands of islands, can form a harmonious entity; they are developing a common language. Altho there are many religions among them, religious conflicts are alien to their nature. And their innate courteousness leads them to respect the rights of minorities, which respect is one of the fundamental requirements of a democracy."

Three months after this speech was made, a rising tide of Indonesian nationalism and anti-Japanese resentment was climaxed by the proclaiming of the Republic on August 17, 1945 in that chaotic period between Japan's military capitulation and its formal surrender. Again, to quote Dr. H. J. Van Mook, in a speech made in October, 1946: "It is apparent, looking back on the history of the past years, that forces were at work in Indonesia which were more significant and had deeper roots than any mere surge of wild terrorism, forces which at the same time had on the whole resisted the Japanese Fascist War."

On November 15, 1946, the government of the Netherlands concluded the Linggadjati agreement recognizing *de facto* authority of the Republic of Indonesia over Java, Sumatra and Madura which together account for nearly 86 per cent of the population of Indonesia and represent the richest and most developed areas of the thousands of islands in the archipelago. According to Article I of this agreement, other areas are to be included gradually in the republican territory. This process is to be completed by January 1, 1949. The Netherlands and the Republic are to cooperate in the

"formation of a sovereign democratic state on a federal basis to be called the United States of Indonesia." It will consist of three parts: The present Republic, East Indonesia, and Borneo. The agreement also provides that "to promote the joint interests of the Netherlands and Indonesia" an Indonesian-Netherlands Union shall be formed.

Another salient provision of the Linggadjati agreement is that steps shall be taken by the Netherlands and the Republic to obtain admission of the United States of Indonesia as a member of the United Nations as soon as possible after the formation of the Netherlands-Indonesian Union.

Indonesia as yet lacks adequate technical, commercial, and cultural leadership to make independence truly a reality. There still remains need for a certain amount of outside guidance; but an Indonesian personality is growing—politically, socially, and economically. Progress toward complete self-government and democracy should be fairly rapid and certain. The development of any such free, independent and prosperous country is a matter of vital concern to the world.

THE DISTINGUISHED SERVICE AWARD FOR 1947

The Distinguished Service to Geography Award was made to Dr. Alice Foster of the University of Chicago.

This award was made, in part, in recognition of her contributions to the National Council of Geography Teachers. As a president of the Council, as a member of numerous committees, as a constructive critic of the organizational structure of this society, as an inspiration to new, faltering members—in these and other ways she has furthered the work of the Council.

Alice Foster is a distinguished teacher, both in face-to-face situations and thru her writings. She is a master of the kind of disconcerting remark that prompts a re-examination of long-accepted conclusions, and skilled in phrasing questions that point the way to open doors and more rewarding trails. Especially notable have been her essays on geographical education at the secondary level and her contributions, in textbooks and magazines, to economic geography.

This award is a recognition, not only of the range and volume of Miss Foster's work in geography and geographical education, but also of the scholarly quality and meticulous workmanship for which her writings have become known. These qualities have attracted and inspired inexperienced geographers and teachers, and have stood a constant challenge to more mature workers in the field.

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December 27, 1947

JOURNAL OF GEOGRAPHY PRIZES

In January, 1947, we had the pleasure of announcing a series of prizes, to be awarded to contributors of outstanding articles that have appeared in the JOURNAL OF GEOGRAPHY. These prizes are made possible by the generous contribution of one of America's eminent geographers who insists that he remain anonymous. He is convinced: 1) "That the fine service contributed over the years by the *editors* of the JOURNAL merits far more recognition than it has received. These prizes honor them. 2) That the receipt of the prizes by the authors of the articles judged best will encourage these authors and other authors, with the result that additional excellent manuscripts will be offered for publication in the JOURNAL. 3) That public recognition of worthy achievement will help not only those who receive the recognition but also those who participate in any way. Indeed the public will think better of geography and of the JOURNAL when it learns of these prizes." Under the terms of the gift the President of the National Council of Geography Teachers is directed to appoint committees to make the award. The President is *ex officio* a member of each committee.

J. Paul Goode Prize

Dr. Goode was one of the founders and editors of the *Bulletin of the American Bureau of Geography* which was merged with the *Journal of School Geography*. Dr. Goode also served as one of the editors of the JOURNAL OF GEOGRAPHY in 1902. He was also known as a great and inspiring teacher and as a cartographer. His school atlas and maps were among his great contributions. The prize in his honor was to be awarded for an article, published in the JOURNAL, notable for graphic or cartographic presentation. Accordingly the award has been made to Dr. Erwin Raisz of Harvard University for his article entitled "Landform, Landscape, Land-Use, and Land-Type Maps," which appeared in March, 1946.

George J. Miller Prize

Mr. Miller is the present editor of the JOURNAL OF GEOGRAPHY. The prize established in his honor was to go for an article dealing with some phase of geographic education or helpful suggestions to teachers. Accordingly it has been awarded to Dr. J. Russell Whitaker for his article entitled "Design for High School Geography," published in the JOURNAL in November, 1944.

The staff of the JOURNAL wishes to again take this opportunity to express its great appreciation of the generous gift which has made the awarding of these prizes possible. The next awards will honor Dr. Ellsworth Huntington and Dr. Almon E. Parkins.

THE NATIONAL COUNCIL AT WORK

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EDITORIAL NOTES AND NEWS

In these days of anxiety over shortages of fuel, particularly of fuel oil, it may be helpful to remember that the vast amount of solar radiation falling on green plants is being stored as chemical energy in carbohydrates. Coal, gas, and petroleum are reserves of solar energy stored underground in some long past geological age. Our sun today pours out energy which our plants make available to us in various forms. Of these forms three are of particular value: cellulose, starch, and sugar. Plants are not equally efficient in the production and storage of energy; and location, with reference to daily hours of sunshine and height of noonday sun, is a factor of major importance. Thus bamboo grown in the tropics annually produces cellulose much more rapidly than a pine tree does in the same time in Finland, and the sweet potato is far ahead of the onion in starch production. Both sugar beets and sugar cane are champion sugar producers. Since sugar is one of our greatest present-day sources of organic material and available, stored, solar energy, it is fortunate that world sugar production normally totals 35 million tons a year. That of the United States alone amounts to 7 million tons. Now that sugar is not merely used as a food for man but it is a product of greatest significance in the modern chemical and industrial world, it is fortunate that the sugar industry in 1943 organized the Sugar Research Foundation, a non-profit corporation. It has announced a series of Sugar Research Prizes which should materially stimulate researchers in finding new knowledge and uses of sugar. A Grand Prize of \$25,000 will be awarded in 1950, and yearly ones of \$5,000. Selection of the prize winners will be made by a special committee of the National Academy of Science thru the National Science Fund. So we can look forward with confidence to better living made possible by the vast storage of solar energy made available by plants, especially by those grown in the tropics and subtropics.

The 200-inch reflector of the Palomar Observatory was recently trucked from the California Institute of Technology at Pasadena to the observatory on Palomar Peak. This mirror has been undergoing grinding-polishing operations at the Institute since 1936. When installations are completed, astronomers and other scientists will be able to make photographs and spectrographic analyses of stars and other heavenly bodies that have up to this time been beyond the range of any other telescope. Observations will be made jointly by Caltech and the Carnegie Institution.

Britain is planning a large expansion in the generation of electricity. A steam plant which operates four dynamos was recently completed at a cost of \$20,000,000. Added extensions to this plant will soon be started to treble its output. The new plans call for the development of a colliery from which supplies of coal will be fed directly to the furnaces. High priority is given to the construction of new power stations. The present development program calls for the building of 31 plants within the next five years to satisfy increased industrial and domestic needs. A million kilowatts should be available by 1950. Some of the plants will utilize water power. One such hydro-electric plant is the Gaur Project which will utilize the fall of the Gaur River as it flows from Loch Eigheach to Loch Rannoch. Where dams are likely to interfere with the life cycle of fish, provision must be made for passes to enable fish to ascend the river.

Vast areas of the British Colonial Empire are being mapped from photographs taken in planes flown at high elevations above the terrain. Radar controls the flight of the aircraft over the strips selected by the field surveyors. The maps prepared from the photographs, along with information read out of the photographs, will provide the basis for specific forms of economic development. Recent mapping projects are or have been cen-

tered in East, West, Central, and South Africa; Malaya; North Borneo and Sarawak. Information thus obtained should also help locate mineralized areas and help solve problems which may be due to severe erosion or other causes revealed by the aerial surveys.

A study on world population by our State Department estimates that the world's population will increase from the present 2.250 billion to 2.438 billion by 1955. This study reveals a stable or slowly increasing population in western Europe, North America, and Australia-New Zealand; declining birth and death rates in eastern and southern Europe, the Soviet Union, and Japan; and no declining birth rates but lowered death rates in most parts of Asia, Africa, and Latin America.

To aid in the training of Air Force officers, the Air War College curriculum has included a program of training in the use of a new global chart series. Eleven of the series are based on a stereographic projection centered on the north pole. Titles and numbers are as follows:

- GH 1. Political and Time Chart
- GH 2. Physical Relief
- GH 3. Temperature Provinces and Ocean Currents
- GH 4. Annual Precipitation
- GH 5. Climatic Regions
- GH 6. Vegetation Chart
- GH 7. Density of Population
- GH 8. Economic Activities
- GH 9. Transportation
- GH 10. Isobars and prevailing winds, January
- GH 11. Isobars and prevailing winds, July

The approximate scale at latitude 40° is 1:24,000,000, or one inch to 329 nautical miles. Political boundaries are those of early 1938. The relief map coloring along with some other symbols are those used in the J. Paul Goode School Atlas. The series will be expanded to include maps centered on the south pole. In addition to this GH series, there is a series of five Azimuthal Equidistant Charts as follows:

- ZD—10 Centered on the United States and a nomograph accompanying it
- ZD— 9 " " U.S.S.R.
- ZD— 7 " " Japan
- ZD— 4 " " Spitzbergen
- ZD— 1 " " Alaska

There is a descriptive article to accompany each series. Each series is adapted to classroom use. When individual maps are hung side by side, striking interrelationships may be noted between relief, latitude, winds, precipitation, ocean currents, pressure, population density, and the transportation pattern of each area. Since most people have been oriented to a flat east-west concept of the world as brought out by the Mercator projection, these maps will help greatly to orient one to the global concept of the world and to the great circle routes so important in this air age. The maps may be purchased at nominal cost from the Department of Commerce, U. S. Coast and Geodetic Survey, Washington, D.C.

Since the Swiss depend to a large measure on financial returns from winter sports' programs, accident prevention becomes a major issue. Biggest factor in marring this program is the avalanche. Studies of the properties of falling snow and of snow masses have for years been undertaken by various government agencies in the cantons, or in commu-

nity centers, or by the railroads. Based on these studies, forecasts could be made of the time and probable path of the descending avalanches. Also, explosives might be used to break up the snow masses before they reached the proportions likely to result in avalanches. In the beginning of the last war, the Swiss acted to coordinate these various agencies since Switzerland must keep its major transportation lines open to resist possible invasions. To this end, the Swiss set up the Institute for the Study of Snow and Avalanches. This Avalanche Research Station is located at Davos which is conveniently centered with reference to the most popular ski runs in the Alps. The Center gets timely reports from several observation posts in the sports areas, and these reports form the bases for the bulletins which warn the resort of possible avalanches and point out safe runs. First aid outposts are also maintained. The Institute also erects barriers against the avalanche tracks where forest barriers are lacking or inadequate. Thus the Institute operates to enhance the pleasure of skiing and at the same time reduces avalanche hazards and travel blockades.

American Historical and Geographical Institutions will soon have the use of the original copper plate engravings of 34 charts which constituted part of the Des Barres "Atlantic Neptune." The plates will be presented by the British Admiralty to the American Government thru the British Embassy in Washington. The plates that represent the charts of Nova Scotia are to be presented to the Canadian Government.

Burma left the British Commonwealth early in January. Britain retains no strategic bases, receives no preferential trade provisions and exercises no control over Burma's policy. Future relations between the two are, or will be, regulated by treaty. A three-year defense agreement calls for provisions for training Burmese forces, and financial concessions and commercial relations are being formulated as rapidly as possible.

One of the finest maps of the world drawn on an azimuthal equidistant projection centered on London is available at nominal cost as Admiralty Chart No. 5085 from the Hydrographic Department, Admiralty, London. Altho the map is of particular value to radio engineers, meteorologists, and air men, it is of great value in the classroom as a base to visualize air routes in and out of London. A straight line on this projection ruled from London to any point is the shortest route to that point, and can be computed from the scale expressed in either miles or kilometers. The scale is 1000 statute miles to an inch. It usually comes as a surprise to see that the direct air route from London to Wellington, New Zealand, passes thru Norway and near the Arctic coast of Siberia; that from London to San Francisco passes across Greenland and the northern part of Hudson Bay; and that from London to Singapore is thru Holland and northern Germany.

Little is being heard these days about the fate of Spitzbergen. Will the Russians fortify the islands? They are strategically located with reference to future Arctic air bases, and both Norwegians and Russians are mining coal which probably totals annually three-fourths of a million tons.

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HIGH SCHOOL CONSERVATION

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Within the past decade, in spite of an already bulging high school curriculum, one of the new courses receiving increased attention is conservation. Because in most colleges and universities this subject is offered by the geography department, with geographers rests the opportunity and responsibility of implementing good conservation teachers in our high schools. With this fact in mind, the question arises: How can geography departments best promote high school conservation teaching? Perhaps in the past too much has been written about whether conservation should be included with other subjects or taught as a separate course.

The purpose of this paper is to make some suggestions and list factual experiences the author gained during the past ten years at Southern Illinois University where he instructed and supervised a high school conservation class. It is hoped that this paper will help teachers and administrators who wish to add conservation to the high school curriculum. We all agree that conservation should be taught. Most educators and teachers also will agree the teaching of this subject today leaves room for a lot of improvement. Being still a rather young course, there is a great demand and need for information about introducing and teaching high school conservation successfully.

A HIGH SCHOOL CONSERVATION COURSE

In the fall of 1938, Dr. Hal Hall,² principal of the University High School, Southern Illinois University, consented to add a con-

¹The experiences presented in this paper are those of the writer during the time he was head of the Geography and Geology Department at Southern Illinois University, 1935-1947.

²Dr. Hal Hall is now superintendent of the Belleville Township High School and Junior College.

servation course to the curriculum providing the writer taught it and supervised the college student teachers assigned to the class. The triple objective of such a course was: 1) to furnish content material, 2) to provide an opportunity for the practice teachers to teach the subject, and 3) to give university recognition to a subject which should be added to all high school curriculums in Illinois and especially southern Illinois. By adopting this new course the University High School was the first in the state of Illinois to offer conservation as a separate subject. From the time it was introduced the writer was placed in charge and held responsible for its growth and development.

Because conservation texts were still not available in 1938, student enrollment was limited. Only seniors were permitted to take the course. Students who had not completed the Physical and Economic Geography courses were advised not to take conservation unless they had a strong background in other physical and social science subjects. Students with a "C" average were also discouraged.

As the course developed and materials were made available, restrictions became more elastic. After suitable texts came off the press sophomores and juniors could enroll. Later the high school physical geography instructor retired and was not replaced. Consequently students were permitted to register for conservation without the important background of physical geography. Economic Geography, tho not a prerequisite is still highly recommended. To encourage students to take Economic Geography as a prerequisite this subject is offered the fall semester and Conservation the spring semester. For both semesters courses are offered at the same hour enabling students to plan a full year's work of geography.

When texts were not available in 1938 student teachers and supervisors prepared and taught units on various phases of the subject. Later *Conservation of America's Resources* by Charles Elliott was selected as a text. We continued to prepare units to supplement the text—chiefly the units built around local and state problems.

In order to be a practice teacher in high school conservation, the university student must meet three requirements. First, he must take the university conservation course and make a grade of "B" or better. Second, in addition to majoring or minoring in geography, he must have a minor or major in social studies or biology. Third, the prospective teacher must show a marked interest in conservation teaching and justify his being given the opportunity to

teach the subject. With the exception of the war years, more students asked for conservation practice teaching than we were able to use.

At the peak of the Second World War the university geography staff was reduced to the extent that this high school course could not be offered. It appeared in the curriculum again after the war and it was last offered in 1947. The writer is convinced that conservation should be added to the curriculum of every four-year high school in Illinois and the nation as soon as possible. It need not be a required course but it should be made available to those wishing to take it.

GROWTH OF HIGH SCHOOL CONSERVATION IN ILLINOIS

Following the lead set by the University High School, other high schools in the state soon began to add conservation to their curriculum. The first of these were located in the southern part of the state where conservation problems are more acute. The teachers who established these courses were those who had had conservation at Southern Illinois University. Some of the first high schools to offer the subject were Herrin, Dongola, Joppa, Coulterville, and Du Quoin.

Later in 1945-1946 a conservation course was added to the University High School Curriculum, Illinois State Normal University at Normal. Dr. Lathrop in an article entitled "Geography—a 'Must' in Secondary Education," writes, "... All who are concerned with the problem in the University High School are convinced that an organized course in Conservation gives students a better understanding and over-view of the problem than can be given from units on conservation which may be taught in other subject-matter courses."³

The growth of conservation as a high school subject in Illinois has been helped materially by the support of the State Superintendent of Public Instruction, Vernon L. Nickell. In a letter to the writer dated February 21, 1944, Mr. Nickell wrote: "The time that pertinent problems such as conservation, should be taught, is during the development period of youth. I believe every four-year high school in the State of Illinois should as soon as possible, be able to present a course in conservation, possibly an elective, to any child who elects to take it."

³ H. O. Lathrop, "Geography—A 'Must' in Secondary Education." *Illinois Education*, April, 1947, p. 238.

In May, 1947, I received a letter from a teacher of the Rosiclare Community High School, Rosiclare, Illinois, which reads in part as follows: "We are putting a course in our high school on Conservation. What text would you recommend for such a course?"

TEXTS AND BOOKS

At the present time there are several available conservation texts. Four of the best books are: *Conservation of American Resources* by Charles N. Elliott; *Conservation of Nation's Resources* by Harry E. Flynn and Floyd E. Perkins; *Conservation and Citizenship* by George T. Renner and William Hartley; and *The Conservation of Natural Resources* by H. Basil Wales and H. O. Lathrop. Any teacher with the responsibility of selecting a high school conservation text should examine these four before deciding. Regardless of what book is chosen the others should be in the library and in the geography room available for supervised study. Even if *Conservation and Citizenship* is not selected as a text, the teacher should consult it because of its excellent teacher helps.

All high school teachers should use and own if possible the following books. *Conservation of Natural Resources*⁴ by George T. Renner gives the best educational approach to the problem of conservation teaching. *Life and Death of the Land*⁵ by J. R. Whitaker gives the best world viewpoint and philosophical treatment of conservation yet written. Teachers of conservation should read and reread *The Foundations of Conservation Education* by Henry B. Ward.⁶ And the teacher needs a good college text in the subject. Altho it is old and needs revision the best is *Our Natural Resources and Their Conservation* edited by Almon E. Parkins and J. R. Whitaker.⁷ As a fifth book for ownership at the present time I would recommend *Elements of Soil Conservation* by Hugh H. Bennett.⁸ Then, if your congressman has not used up his supply you may add to your list a free copy of *Soils and Men*, 1938 Yearbook of the Department of Agriculture—otherwise this book can be secured for \$1.75 from the Superintendent of Documents, Washington, D.C.

In addition to the four books suggested as possible texts, the following books will prove valuable in the classroom for reference and supervised study:

⁴ John Wiley and Sons, Inc., New York, 1942.

⁵ George Peabody College for Teachers Press, Nashville, Tennessee, 1946.

⁶ National Wildlife Federation, Washington, D.C., 1941.

⁷ John Wiley and Sons, New York, 1936.

⁸ McGraw-Hill Book Company, 1947.

- Baer, Mariam E.: Pandora's box: the story of conservation, New York; Farrar and Rinehart, Inc., 1938.
- Bennett, Hugh H.: Elements of soil conservation, New York; McGraw-Hill Book Company, Inc., 1947.
- Bennett, Hugh H. and Pryor, William C.: This land we defend, New York; Longmans, Green & Company, 1943.
- Butler, Ovid: American conservation in picture and story, Washington, D.C.; The American Forestry Association, 1935.
- Camp, Raymond R.: All seasons afield with rod and gun, New York; McGraw-Hill Book Company, 1939.
- Chase, Stuart: Rich land: poor land, New York; McGraw-Hill Book Company, 1936.
- Cheyney, E. G. and Schantz-Hansen, T.: This is our land, Saint Paul, Minnesota; Webb Book Publishing Co., 1940.
- Comstock, Anna Botsford: Handbook of nature study, Ithaca, New York; Comstock Publishing Co., 1914.
- Coyle, David C.: Waste: the fight to save America, New York; Bobbs-Merrill Co., 1936.
- Dahl, Iriquois: 1001 outdoor questions, New York; Funk and Wagnalls, 1939.
- Dahlberg, E. M.: Conservation of renewable resources, Appleton, Wisconsin; C. C. Nelson Publishing Company, 1941.
- Glover, Katherine: America begins again, New York; McGraw-Hill Book Co., 1939.
- Gustafson, Axel F. and others: Conservation in the United States, Ithaca, New York; Comstock Publishing Co., 1940.
- Hawes, H. B.: Fish and game: now or never, New York; D. Appleton-Century Company Inc., 1935.
- Henderson, Junius: The practical value of birds, New York; The Macmillan Co., 1934.
- James, Harlean: Romance of the national parks, New York; The Macmillan Company.
- Keso, Edward E.: Conserving our resources, Oklahoma City, Oklahoma; School Supply and Publishing Co., 1940.
- Lord, Russell: Behold our land, Boston; Houghton Mifflin Co., 1938.
- Lorentz, Pare: The river, New York; Harcourt, Brace and Co., 1938.
- Melbo, Irving R.: Our country's national parks, New York; The Bobbs-Merrill Co., 1941.
- Mitchell, Lucy and others: My country 'tis of thee, Chicago; The Macmillan Co., 1940.
- Moon, F. and Brown, N. C.: Elements of forestry, New York; John Wiley and Sons, 1937.
- Needham, Paul R.: Trout streams, Ithaca, New York; Comstock Publishing Co., 1940.
- Pack, Charles L. and Gill, Tom: Forest facts for schools, New York; The Macmillan Co., 1937.
- Parkins, Almon E. and Whitaker, J. R.: Our natural resources and their conservation, New York; John Wiley and Sons, 1936.
- Pearson, Thomas G.: Birds of America, New York; Garden City Publishing Co., 1936.
- Person, Harlow S. and others: Little waters, Washington, D.C.; U. S. Government Printing Office, 1936.
- Pryor, William C. and Pryor, Helen S.: Water, wealth or waste; Harcourt, Brace and Company, 1939.
- Renner, George T. and Hartley, William: Conservation and citizenship, New York; D. C. Heath and Co., 1940.
- Rossell, Leonard: Tracks and trails, New York; The Macmillan Co., 1928.
- Shippen, Katherine B.: The great heritage, New York; The Viking Press, Inc., 1947.
- Smith, Joseph Russell: Men and resources: a study of North-America and its place in world geography, New York; Harcourt, Brace and Co., 1937.
- Stevens, Ross: Talk about wildlife, Raleigh, North Carolina; Bynum Printing Company, 1944.

- Thomas, Lowell: *Hungry waters*, Chicago; The John C. Winston Co., 1937.
 Tippet, James S.: *Paths to conservation*, New York; D. C. Heath and Co., 1937.
 Van Dersal, William R. and Graham, Edward H.: *The land renewed*, New York; Oxford University Press, 1946.

If the high school has a large library, some of the following books might be placed there for less frequent use:

- Allen, S. W.: *An introduction to American forestry*, New York; McGraw-Hill Book Company.
 Baer, Mariam E.: *The wonders of water*, New York; Farrar and Rinehart, Inc., 1938.
 Baynes, Ernest H.: *The sprite*, New York; The Macmillan Co., 1939.
 Bridges, Thomas Charles: *Wardens of the wild*, London, England; George G. Hanap and Co. Ltd., 1937.
 Brisner, Ayers and Shappard, Ward: *Our use of the land*, New York; Harper and Brothers, 1939.
 Burges, Austin E.: *Soil erosion control*, Atlanta, Georgia; Turner E. Smith and Co., 1936.
 Connery, Robert H.: *Governmental problems in wild life conservation*, New York; Columbia University Press, 1935.
 Gabrielson, Ira Noel: *Wildlife conservation*, New York; The Macmillan Co., 1941.
 Gabrielson, Ira Noel: *Wildlife refuges*, New York; The Macmillan Co., 1943.
 Goslin, Phyllis A. and Goslin, Omar P.: *Rich man, poor man*, New York; Harper and Brothers, 1935.
 Graham, E. H.: *Natural principles of land use*, New York; Oxford University Press, 1944.
 Gustafson, Axel F.: *Conservation of the soil*, New York; McGraw-Hill Book Co., 1937.
 Holbrook, Stewart: *Burning an empire*, New York; The Macmillan Co., 1943.
 Jacks, G. V. and Whyte, R. O.: *Vanishing land: a world survey of soil erosion*, New York; Doubleday, Doran and Co., 1939.
 Johnson, G. W.: *The wasted land*, Chapel Hill; University of North Carolina Press, 1937.
 LaGorce, John Oliver: *The book of fishes*, Washington, D. C.; National Geographic Society, 1939.
 Leopold, Aldo: *Game management*, New York; Charles Scribner's Sons, 1933.
 Sears, Paul B.: *Deserts on the march*, Norman, Oklahoma; University of Oklahoma Press, 1935.
 Turner, E. L.: *Every garden a bird sanctuary*, London, England; H. F. and G. Witherby, Ltd., 1935.

SOME RECENT ARTICLES

During the last ten years, the number of articles on philosophy, methods, and aids for conservation education have increased. The teacher of a high school conservation course or of conservation units in other courses may read with profit the following articles:

- Barlte, Glen G.; Ekblaw, Sidney E.; Hilken, Henry G.: *Conservation of our fuel resources*, *Journal of Geography*, v. 39, 1940, pp. 274-280.
 Barton, Thomas F.: *Teaching conservation in the high school*, *Illinois teacher*, v. 28, 1939, pp. 71, 94-95.
 Beard, W. P.: *Social viewpoint in conservation education*, *Social education*, v. 3, 1939, pp. 637-640.

- Carter, Harriet: Our national forests—a social problem, *Journal of geography*, v. 39, 1940, pp. 151-155.
- Saving our soils, *Journal of geography*, v. 37, 1938, pp. 308-318.
- Davis, David O.: Soil and water conservation, *Journal of geography*, v. 40, 1941, pp. 307-310.
- Duthie, George A.: Forestry and the public schools, *Journal of geography*, v. 36, 1937, pp. 186-192.
- Freeman Otis W.: Conservation as a post-war problem, *Education*, v. 65, 1945, pp. 316-322.
- Halverson, L. H.: Whither conservation education, *Journal of geography*, v. 46, 1947, pp. 178-181.
- Hartley, W. H.: Illustrative materials for conservation education I, pictures, charts, and posters, *Journal of geography*, v. 41, 1942, pp. 288-295.
- Illustrative Material for conservation education II, slides, v. 41, 1942, pp. 332-335.
- Illustrative material for conservation education III, film strips, *Journal of geography*, v. 42, 1943, pp. 33-36.
- Illustrative material for conservation IV, objects, specimens, models, *Journal of geography*, v. 42, 1943, pp. 59-60.
- Illustrative material for conservation education V, maps, *Journal of Geography*, v. 42, 1943, pp. 108-111.
- Illustrative material for conservation education VI, motion pictures, *Journal of geography*, v. 42, 1943, pp. 153-157.
- Innis, Harold A.: The economics of conservation, *Geographical review*, v. 28, 1938, pp. 137-139.
- Lathrop, H. O.: An experiment in conservation education, *Journal of geography*, v. 46, 1947, pp. 96-100.
- Michand, Howard H.: The Indiana conservation camp for teachers, *School science and mathematics*, v. 47, 1947, pp. 141-145.
- Miller, George J.: Planning and conservation, *Journal of geography*, v. 35, 1936, pp. 157-160.
- Odum, Evelyn and Hammer, Irwin A.: The land is a teacher, *Educational leadership*, v. 4, 1947, pp. 310-314.
- Parson, Rueben L.: The responsibility of geographers in land planning, *Education*, v. 60, 1939, pp. 229-231.
- Reitz, William W.: Teaching resource conservation thru geography, *Journal of geography*, v. 46, 1947, pp. 227-234.
- Renner, George T.: Conservation as unit of study in geography, *Education*, v. 58, 1938, pp. 283-290.
- Teaching conservation of resources, *Journal of geography*, v. 38, 1939, pp. 245-251.
- Strong, Helen M.: The soil conservation service and its work, *Journal of geography*, v. 36, 1937, pp. 249-260.
- Planning and conservation, *Journal of geography*, v. 36, 1937, pp. 118-120.
- Symonds, Clare: Tackling the erosion problem in high school geography classes, *Journal of geography*, v. 40, 1941, pp. 30-33.
- Webb, Lina: A field study of agriculture in north Alabama, *Journal of geography*, v. 39, 1930, pp. 301-308.
- Whitaker, J. R.: The place of geography in the social studies from the view point of conservation education, *Journal of geography*, v. 42, 1943, pp. 12-21.
- International aspects of conservation, *Journal of geography*, v. 43, 1944, pp. 121-131.

Place relations in conservation education, *Peabody journal of education*, v. 18, no. 4, 1941, pp. 207-213.

OBJECTIVES AND GUIDING PRINCIPLES

The objectives and guiding principles of conservation teaching have been so well given by others that the writer need not take time to list them here. Consult Whitaker, in his article entitled "The Place of Geography in the Social Studies: From the Viewpoint of Conservation Education."^{*} He gives both objectives and guiding principles. Also in his book *Life and Death of the Land*, Whitaker devotes Part III to the teaching phase of conservation.

In Renner's book *The Conservation of National Resources*, chapter 8 is entitled "Objectives in Conservation Education." Moreover in the book *Conservation and Citizenship* of which Renner is co-author, the objectives are printed on the back of the picture which introduces each chapter or phase of the subject.

PERSONNEL

Because conservation content material comes from so many subject matter fields, and its problems are so complex, the high school conservation teacher must be well trained. Few if any instructors who have not had a college or university conservation course should be permitted to teach the subject. So important is the course that some states require all teachers to take conservation before they can certificate to teach any pre-college subject at any level.

An average of "B" in a college conservation course is not necessarily the key to success. It is important that the prospective teacher take practice teaching in the subject. The administration of every institution endowed with the responsibility of preparing future teachers for the region it serves should seriously consider if it is providing an adequate teacher training program in conservation.

The prospective teacher should be a geography, social studies, or biology major with possibly minors in one or both of the other two subjects. The geography major should have about equal training in the physical and social studies phases of the subject.

The conservation teacher should enjoy the out-of-doors, like to conduct field trips, and have a personal interest in organizations

^{*} Whitaker, J. R., *The Place of Geography in the Social Studies: From the viewpoint of Conservation Education*, *Journal of Geography*, Volume 42, 1943, pp. 12-21.

which deal with land utilization. He should participate in some regional, state, or national organization that is promoting conservation in the community and region in which he lives. For example, he may belong to a county soil conservation organization or to a local chapter of Friends of the Land.

If a short conservation workshop is held in his county, the conservation teacher should take advantage of the opportunity and become better acquainted with the conservation problems and personnel of his local area.

Moreover, if a sufficient part of the teacher's time is devoted to conservation teaching, he may enroll at one of the summer conservation camps sponsored by the universities in various states such as Indiana or Ohio.

CONSERVATION AND THE CURRICULUM

The conservation course can be of greatest service in the high school curriculum if the advanced students study the subject as a capstone to their social studies, biology, physical science or vocations courses. Both terminal and college preparatory students should be permitted to take the subject. The credits earned should be recognized in any of the areas or fields named above. Students who have taken a large number of agricultural courses should not enroll for conservation unless the agriculture and conservation teachers agree that they will profit from such a course.

That a high school has a good two- three- or four-year agriculture course should not be used as an excuse by Principals for not adding conservation to the curriculum. In only a few high schools do most of the students enroll in agriculture. In the others, students majoring in other subjects do not have the time or desire to take several courses in agriculture in order to get the complete picture and basic understanding of conservation. In fact, few high school agricultural departments cover all the phases of conservation. Many agricultural departments do not present such phases of conservation as minerals, parks, highway beautification, floods, planning, etc. Furthermore, as a rule, urban students do not enroll in agricultural courses.

The writer does not recommend a conservation course for the junior high school. These pupils may have a keen interest in the use of natural resources and are old enough to know that resources can be exhausted if not protected or replenished. The logical place to introduce and develop principles of preservation, utilization, and

restoration is in the senior high school. These mature students can better comprehend the biologic, economic, geographic, historic, political, and social phases of our present conservation problems. Conservation makes a good capstone course in a social studies, physical science, or biology major.

STRESS COMMUNITY AND REGIONAL PROBLEMS

Regardless of what text is selected and what supplementary books are chosen, the responsibility of teaching the local and regional problems falls upon the teacher. Texts written for national use cannot develop special problems peculiar to the community or region. Pupils are usually interested in local and regional problems. The person who covers a textbook unit on forests and fails to call attention to a nearby national forest or the need of woodlots in the community or county is a poor teacher.

Practically every community, no matter how small, has conservation problems and projects. Often these conservation projects are within a short distance of the high school. For example, when teaching a unit on forests at the University High School at Carbondale we studied the Shawnee National Forest which is being established in the local and adjacent counties. We also discussed farm woodlands because substantial areas of many Jackson county farms are best suited to trees. Moreover, five to six million acres of land in Illinois should be growing trees and over half of this land is in the southern one-third of the state where the University High School is located. Then during the study of water resource, the problem of city water supply, the flooding of the county's rich bottomlands by the Mississippi River and the Use of Crab Orchard Lake are all taken up. Each teacher will need to cut the cloth of his course to the pattern of local and regional conservation problems. Generally textbooks give the national picture and stress the basic concepts, ideas, and attitudes.

Some teachers need help to develop and prepare their own units on local conservation problems. To help them in this work Renner on page 192 of his book, *The Conservation of National Resources*, gives a helpful outline as a guide in studying the local environment.

APPROACHES

There are some teachers who believe high school pupils will not be interested in conservation. Their reason is that city pupils will

think conservation is agriculture and that they never expect to live on a farm or own a farm. These fears will usually prove groundless if the teacher uses four approaches to the subject, namely, citizenship, health, city dependence, and vocation.

Citizenship. For most pupils in large high schools, conservation education is purely impersonal. Few of these will have a direct part in the management and utilization of forests, fields, and minerals. Yet in a democracy, all adult people are given the opportunity to vote. They should be given understandings and attitudes which will make it possible for them to approve or disapprove what private enterprise or public agencies are doing with natural resources. These young people will help elect representatives to state and federal governments who will vote for or against laws, methods, and policies of restoring and conserving our resources.

What better method is there to teach citizenship than by studying current conservation problems and the methods required to solve them? During the study of these problems governmental agencies, bureaus, and departments became functional parts of our government rather than encyclopedic knowledge.

Health. Because of rapidly developing bodies, athletic events, and physical training, high school pupils are and should be interested in matters of health. A large amount of literature is appearing to substantiate the relationship between good health, good food, and good soil. Stressing the point that the health of city people is dependent in part upon the protection of our soil from erosion and fertility depletion, arouses an interest in good health and resources.

City dependence. The wise use of natural resources influences the lives of both urban and rural people. Cities need a constant flow of resource products to furnish food and raw materials for their factories. Once city pupils understand the degree to which cities depend upon resources, their interests in conservation begins. If they have not had an Economic Geography course before studying conservation they may need to be introduced to the philosophy of interdependence between city and country.

Vocational. Perhaps less than a fourth of our high school pupils plan to farm or own farm land. However in rural and small city high schools the fraction will be much higher. High school students who live on the land or whose parents own land take a greater personal interest in conservation problems. They not only want to obtain correct conservation understandings and attitudes but they

are interested in detailed corrective methods and techniques. Some pupils have an opportunity to apply almost immediately conservation measures learned in this course.

CONCLUSION

Conservation, as a course, should not be added to the curriculum unless a well trained teacher, books, and necessary equipment are available. Much of the value of the course will be lost unless community and regional problems are studied and the local community used as an out-door laboratory. Because of their local and regional settings and problems, many high schools should be offering a conservation course. How long will high school administrators remain blind to the problems of the area in which their high schools are located? Ten years ago the administrators could use the excuse that tools, books, visual aids, and teachers were not available. Today equipment and more teachers are available. The responsibility in many places now rests with the school administrators.

THE USE OF CURRENT EVENTS IN GRADE FOUR

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Social Studies can be enlivened and enriched by the use of current events taken from magazines and newspapers. There is a wealth of interesting and historical material in current events which is often neglected in favor of textbooks.

Fourth grade is an excellent grade in which to start the children on the hunt for useful items; because of their natural enthusiasm they can be trained to search for interesting clippings that will evoke good class discussions.

A teacher will achieve the best results in a current event class if the children know ahead of time what day of the week it is to be. (I prefer Monday because the children have plenty of time to look for the news over the weekend.)

After the items have been used the most interesting ones can be placed on the bulletin board by a committee of boys and girls and allowed to remain there until the following week. Reports from the radio and other news clippings can be added to the bulletin board each day.

Recently a child brought into the classroom a current event pertaining to the United States Expedition to Antarctica. I centered my whole thirty minute period around this topic since it offered as much opportunity for getting the correct conception of history and geography as any pages from a textbook. Before the class discussion began I worked out the following outline:*

- I. Aims
 - A. To teach the location of Antarctica and the quickest way to travel there.
 - B. To give an understanding and appreciation of how difficult the journey is.
 - C. To teach the respect for the rights of other nations.
 - D. To teach the children to locate the claims on a map.
 - E. To thrill the children with the adventure of the trip, and the idea of geography and history in the making.
 - F. To compare the two polar regions.
- II. Actual geographic facts the clipping gives
 - A. A journey to Antarctica by boat and plane.
 - B. The trip is across the Antarctic Circle.
 - C. The temperature in winter and summer.
 - D. The area—6,000,000 square miles
 - E. 14,000 mile coastline mapped already.
 - F. Daily weather reports.
 - G. Antarctica is a plateau region.
- III. Why is the journey being made?
 - A. It is a scientific undertaking
 1. To chart unexplored wastes.
 2. An inventory of mineral assets.
 3. To check climatic conditions.
 4. To study vegetation and animal life.
 - B. Let the children guess reasons, then summarize.
- IV. Research Activities
 - A. Look for maps of the Antarctic region.
 - B. Reports from other sources such as the radio, local newspapers, magazines, or movies.
 - C. Oral or written reports on the lives of Ronald Amundsen, Capt. Scott (English), Admiral (Rear) Richard E. Byrd, and Lincoln Ellsworth.
 - D. Reports from geography books other than their textbook.
- V. Vocabulary:

annexation	expedition	plateau
Antarctica	maximum	scientific
assets	mineral	sovereignty
average	penguins	uranium
chart		

The whole period was used for this one clipping, but the interest which was aroused was worth it. The children were thrilled to think that they were living in an age of discovery. Rear Admiral Byrd became another Columbus to them. The news items began

* Zoe Thralls. Geography and Current Events. JOURNAL OF GEOGRAPHY, Vol. 39, May 1940.

pouring in each morning and statements from radio broadcasts were reported verbally.

As a result of the interest and enthusiasm from this news item the boys formed a club to make model airplanes. They call it the Admiral Byrd Hobby Club and it meets once a week at a member's home. The secretary of the Club under the supervision of the other members wrote a fan-letter to Rear Admiral Byrd. An exhibit of their planes is being planned soon.

OBJECTIVES FOR TEACHING GEOGRAPHY

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To teach geography well at any grade level from the fourth grade thru the university levels a teacher must be very definite as to what her objectives are. Specific objectives may vary from one grade level to another, but there are certain fundamental objectives which must be realized at all grade levels of geography in varying degrees and with varying emphasis.

Below are listed some of the major objectives.

A. To create an understanding of, and an interest in, the people living in other countries of the world. That is to create an understanding of the political, social, and cultural conditions within those countries as well as to gain definite and accurate knowledge of the people and their activities, or the climates, the topography, and the historical facts which contribute to their present and future development.

1. To teach what the industries of these other nations are, what the pattern of distribution of these industries is, and what the reasons are for the development of these industries.

2. To teach in what ways the cultural heritage peculiar to each country has influenced the lives of the people, their social standards, their educational, religious, and political views and tendencies, and their economic life.

B. To teach that the maintenance of the economic and social life of the United States and its present high level of living is increasingly more dependent on other nations of the world.

1. Because the United States is not one unit physically but only a part of a large continent including several nations.

2. Because the historical development of the United States is tied up with the past of European and Asiatic countries and proceeded during the same general period of development in South America.

3. Because only as each nation realizes that high standards of living may be attained thru fair and peaceful trade agreements can world security be gained.

C. To emphasize the need for cooperation and understanding among the countries of the world to the end that this cooperation will provide for a) greater industrialization and more intensive farming, mining, and grazing, b) necessary raw materials, c) essential manufactured goods, d) markets for domestic products, e) a sound balance between the exports and imports in foreign trade, f) better economic and social conditions, and g) a permanent, peaceful collaboration in all international policies.

D. To create a functioning interest in geography, both at home and at school as evidenced by:

1. The student's interest in current events and the relation of these events to geography.

2. His interest in the settlement of world problems arising from World War II.

3. His interest in, and his attempts to interpret.

After realizing and understanding what the major objectives are in the teaching of all geography a teacher should set down *in writing* the specific objectives for her grade level. Objectives often are just hazy ideas in the mind of a teacher rather than concrete objectives toward which she leads the children thruout the entire course. Likewise each individual unit in the course should have a list of specific objectives toward which the unit is aimed.

UNITY OF PURPOSE AND ACTION IN SOCIAL EDUCATION*

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The chapter thus entitled stresses the fact that all groups concerned with helping young people gain insight into human life and society, into human problems, and into ways of solving them and effecting human betterment are obviously working toward the same general end. In discussing the contribution of geography to that end, the following facts are pointed out. Man writes into the surface of the earth much of the story of himself and his civilization. One must view and analyze landscapes observable on that surface in order to read what they tell about man and his problems. Much of the knowledge gained about him from that source is knowledge that can be gained *de novo* from no other source. Geographers have been concerned consistently with observation and analysis of landscapes. They have found that a large percentage of human problems is rooted in the localization of all human life and in the interdependence of peoples in all parts of the world. Those permanent aspects of human life are rooted, in turn, in the infinite diversity of the earth's surface and the oneness of the physical world. Only thru geographical experiences can one discover *how* the differences in human problems in different localities and region, and *how* the interdependence of all peoples, are rooted in the diversity and unity of the earth habitat. Such knowledge is indispensable in finding means of human progress.

The superficiality of much of the current talk about learning to look at critical problems from various viewpoints becomes apparent from the discussion of what is implied in looking at any problem from a given point of view, and from a consideration of means of developing a geographic point of view. The great width of the gap between purpose and the degree of attainment of it which is implemented by present curricula is pointed out, and one significant development in educational thought which makes for progress in lessening the gap is noted. Something of the nature of further progress to be made is indicated with stress on the fact that different special groups necessarily do different kinds of things as all groups work together toward the attainment of their common general purpose.

* Abstract.

The following outline of major headings and subheadings indicates something of the scope and organization of the chapter.

Written into the Surface of the Earth

- Meanings in two contrasting landscapes
- Meanings in a widely varied group of landscapes
- An ever changing material estate

Critical Problems and Needs

- Difficult questions
- A great challenge
- Need for thought based on various kinds of knowledge
- Educational problems posed by needs
- A significant advance

Developing a Geographical Point of View

- Some general considerations
- A few points to be specially noted
- Beginning to see geographical meanings in landscapes
- Interdependence and world concepts
- A pitfall to be avoided
- Emphasis thruout

Urgent Need for Truly United Action

- The wide gap between purpose and implementation of its attainment
- Cooperation of geographers and other groups
- One basis of difficulty
- Making progress

GEOGRAPHY IN THE TEACHER EDUCATION PROGRAM*

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Functional geography is based on a teacher education program which recognizes geography as a philosophy and an art as well as a science. Such a program recognizes that geography is distinguished from other areas of teaching not so much by the *kind* of world facts it treats but the *way* in which such facts are treated.

It is the business of any teacher education program in geography to develop attitudes to, and understandings and appreciations of the affairs of the community, of the state, of the nation, and of the world in terms of space and human environmental relationships thereto. The teacher of the social studies, moreover, must be prepared to integrate the socialized learning and living experiences of the elementary school child and high school pupil in terms of the geographic realities of this world.

To achieve the above objectives a teacher must understand

* Abstract.

and know how to use three key geographic concepts—"location," "area," and "region." What is the nature of the geography teacher training program with reference to developing these basic concepts? What relationship does this program bear to college course training in geography? How do present state teacher certification requirements rate in terms of the geography teacher training criteria here set forth? These are leading questions treated at length in the original paper here abstracted.

Location analysis explores the *functional* significance of a place. This is something entirely different from simply identifying a place on a map, which requires no teacher training at all—not even pupil training. What is there about the position of the place which distinguishes it in form and function from other places in the world? *Anachronisms* in geography, such as revealed recently by several Gallup polls, can no more give a correct interpretation of human affairs than can anachronisms in history.

Area analysis presumes understanding of the all important ecological principle that historic and current events differ from place to place partly because areas differ in the kind and arrangement of geographic characteristics. The teacher must be trained to recognize the various physical and cultural patterns in any area and evaluate the functional relationships of one to another, both in terms of man's adjustment of the environment as well as his adjustments to the environment.

Regional analysis is the art of delimiting areal units on the basis of essential homogeneity of geographic characteristics within the several areas. Thus, the well trained teacher in geography will recognize that whereas all regions are areas, areas are not necessarily regions. Geographic understandings and interpretations of human patterns of behavior related to this concept may be said to involve the highest type of critical and creative thinking. A teacher prepared to do this type of thinking should experience little difficulty in making maps which reflect clear and sound thinking of man-environment relationships needed properly to develop the facts of history, economics, sociology, political science, and any other social science field.

A special technique for developing geographic thinking and teaching along the above lines is discussed in detail and demonstrated by specific examples in the author's original paper. Formal course training for both the elementary and the secondary school teacher is outlined. State certification requirements for geography

teacher training have been found to be definitely inadequate. Recommendations are made for administrative and academic procedures to remedy the situation.

GEOGRAPHIC INSTRUCTION IN THE PRIMARY LEVEL*

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The study of geography should be a gradual and continuous process starting in the primary grades and continuing thru the elementary and high school levels. It is experiences gained during the primary years that will give children a geographic point of view. Geography in the primary grades will provide sound basic concepts for further study of the subject.

Geography is an ideal subject for children. It has subject matter embracing vital concepts, facts, and down to earth interests. It develops a geographic vocabulary; contributes simple scientific descriptions and explanations; acquaints pupils with the natural and human items of his environment; and develops an interest in and a knowledge of their community. By studying this subject children soon acquire simple skills in the use of pictures, maps, and simplified globes.

Primary geography is not an innovation in the United States or Europe.

A geography readiness program offers many advantages. It stimulates the normal development by providing: 1) purposeful exploration, 2) accurate explanation, 3) community study, 4) reading and language development, and 5) a gradual transition between the study of community geography and world geography.

Teachers should have in mind the concepts the pupils are to learn in the primary level. Then these concepts should be carefully introduced, reviewed, and enlarged thruout the three year program. During the primary grades children should be taught concepts about the six cultural and the nine natural items.

The successful study of intermediate grade geography depends largely upon a systematic and well organized program in the primary level. Pupils cannot learn the necessary background by

* Abstract.

casual or haphazard reading. Incidental presentation of geographic facts and concepts in other subject matter units has also been unsuccessful.

Some factors conditioning methods in the primary level are: 1) interests, 2) vocabulary limits, 3) varying experiences, and 4) community differences.

Globes and maps should be used in the primary level. By the end of the third grade most children should recognize outline maps of their state and the United States and read simple diagrammatic maps.

Properly taught, primary geography helps the child understand his community environment and leads him to an appreciation of the usefulness of natural phenomena.

VERTICAL ARTICULATION OF GEOGRAPHIC INSTRUCTION IN THE SOCIAL STUDIES PROGRAM OF THE ELEMENTARY SCHOOL*

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An effective program in social studies must give careful attention to the sequential development of one's ability to think geographically in situations involving (1) the nature and distribution of natural phenomena, (2) the nature and distribution of man's social, economic, and political activities, and (3) the characteristics of any area, rural or urban, large or small.

The ability to deal with geographic factors influencing life situations is basically dependent upon one's grasp of fundamental natural and cultural concepts, and upon one's understanding of their areal associations. Those who are working on this problem are agreed that there must be a lengthened program of geographic education, a more gradual development of geographic understandings in the primary and intermediate grades, a greater use of community resources and conditions, and a more extensive application of the geographic point-of-view to social, political, and economic problems. Only when the child achieves a real understanding of fundamental natural and cultural concepts, thru direct observation or vicariously, is he ready to undertake a study of areas, areal

* Abstract.

differentiation, and the significance of areal differences from place to place. The sequential development of geographic thought is not necessarily accomplished by a program designed in terms of one or more cycles of world coverage. Local, regional, continental, and world understandings are developed hand-in-hand, and contribute to each other. The attainment of desired objectives in social education is dependent, in part, on the growth of one's ability to think geographically about life situations.

THE HORIZONTAL ARTICULATION OF GEOGRAPHY INSTRUCTION IN THE ELEMENTARY SCHOOL*

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In a large number of elementary schools, today, the study of geography is no longer treated as a separate subject. In such schools instruction in geography is included in a social studies curriculum which is built around the study of society and is concerned with human relationships. A perusal of such curricula suggests that curriculum builders in social education are seeking to organize the content of the social sciences so that pupils, at their respective levels of maturity, can understand the functioning of their world. First concern is placed upon providing each pupil with learning experiences which will give him practice in real situations where he must work and live as a democratic citizen not only in his social studies classroom, but in this interdependent, changing world of people living together in homes, communities, and nations. Emphasis is given not only to what people do but to why and how people feel, think, and act as they do.

The curriculum aims to guide pupils as they work thru specific areas, which have been selected from the vast field of social sciences, into discovering: (1) how they are to a measurable degree, dependent upon the things other people do, who live in other places, (2) how people living in other places are dependent and are affected, in part, by what we do, and (3) how and why people live differently in some places from what they do elsewhere since it is from knowledge of this nature that desirable social attitudes, understandings and behaviors spring.

* Abstract.

Since responsibility for the actual teaching of pupils falls primarily upon the classroom teacher the chapter dealing with "The Horizontal Articulation of Geography Instruction in the Elementary School" is directed to:

1. The approach to horizontal articulation of geographic instruction with the other social sciences in the elementary school.
2. Questions designed to aid in the selection of materials which will contribute to the building of geographic understandings.
3. Suggestions for exercises which aid pupils to acquire and use geographic understandings in order to see what society and the world is like and why.

This presentation of the horizontal articulation of geography is based on the premise that thinking geographically about a problem, and the use of geographic facts, skills, and understandings when approaching a problem from the point of view of another social science stems from systematically planned vertical articulation.

SOCIAL ATTITUDES AND APPRECIATIONS DEVELOPED THRU GEOGRAPHIC EDUCATION*

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Geography, which teaches about the world and the people in it, about the significance of the places where people live, and of the differences from place to place, has, as its traditional function, the broadening of horizons. It necessarily attacks narrow provincialism; it develops an appreciation of the relation of one's own country to other countries.

There are at least four ways in which geography makes a contribution which is unique among the social studies. 1) it presents a meaningful treatment of the land factor in the study of man-land relations; 2) it places emphasis on the significance to man of the differences from place to place on the surface of the earth; 3) it teaches the reading and understanding of the map; and 4) it develops the capacity for out-of-door observation.

The land factor is commonly treated by non-geographers in too general a manner to make clear the importance of this factor in specific human situations. Actually human behavior is closely related in detail to the character of the surface features, the climate, the soils, and other elements of physical geography. Only when

* Abstract.

significant detail is presented, however, are the real relationships made clear.

But to insist that man and his societies are closely connected to the physical features of the land is not to embrace the largely discredited theories of environmental determinism. When geography is studied historically it becomes clear that the physical characteristics of the different regions of the earth have not always had the same significance. It seems that the significance of the physical features is determined by the attitudes, objectives, and technical abilities of the people. As these cultural conditions change, the significance of the land must be reinterpreted.

"The map is a device for studying these significant differences from place to place. In adult social science it can be maintained that there are at least three basic methods of analyzing, correlating, and presenting the results of the analysis of social problems: 1) the statistical method, in which measured data are studied thru the application of mathematical formulae; 2) the cartographic method, in which precisely located data are studied geometrically to bring out the significance of position and pattern; and 3) the expository method, in which the analyses and conclusions are verbalized. The reading and understanding of the map is one of the basic skills of social science, yet of the three, it is the one which is commonly least effectively used.

The study of the map out-of-doors aids in the development of a "bump of location." Geographers, who know where they are with reference to things beyond the range of vision, see more and remember more of what they have seen out-of-doors than do people not so trained.

THE TREATMENT OF GEOGRAPHIC KNOWLEDGE AND UNDERSTANDINGS IN HISTORY COURSES*

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Long-time trends in American education have been unfavorable to a mutual give-and-take between geography and history in our time. The segregation of subject matter has been most complete in the textbook field; if we do not look beyond the texts, our view of the potential contributions of geography to history will continue to be greatly restricted.

There are a number of possible correctives for the narrowed

* Abstract.

vision of persons who can see geography and history only in separate compartments. One prescription is a thoughtful study of the report of the Committee on American History in Schools and Colleges, published in 1944. In its suggestions for course content in the middle grades and high schools, the committee urges emphasis on a dozen or more geographically-related topics, such as type settlements, the localization of manufacturing industries, the development of forms of transportation, exploration of the West, migration of people within the United States, and the rise of cities and metropolitan districts. We can thus learn what was better known to an earlier generation, namely that geography can ably assist history on many fronts if given the opportunity.

In taking advantage of the opportunities offered by geography, the history teacher assumes some responsibilities. Chief of these is the kind and degree of emphasis given to the so-called geographical factors or to all of them in combination. Care must be taken to avoid a one-sided geographic interpretation of history. Pupils should be encouraged to regard geography as a condition in history, rather than as an occasional cause or control of it. Since many high school history texts introduce geography sparingly, and usually under the "geographical influence" label, this is a difficult teaching assignment. Water power, for example, was a condition in, not the cause of, the localization of manufacturing industries in southern New England.

The history course should take fuller account than has been customary of the modified geographical environment. In his occupation of area, man introduces changes which, in turn, become important steps in the sequence of human development. Thus it is found that many of the first New England textile mills were located with reference to pre-existent water power installations used in the earlier gristmill and sawmill era.

History cannot afford to neglect the importance of man's geographical beliefs, as distinct from factual knowledge. Early views of the West, for example, greatly extended the area of the "American desert." That the belief was in part a mistaken one does not diminish its importance in history. Preconceived ideas about geographical conditions in various parts of the country must be understood if the history of those regions is to be made meaningful.

Geography functions best in history when relatively limited areas and periods of time are considered. Thus, the flow of history

must frequently be stopped in order to inspect the relatively static conditions of geography. The teaching of the present geography of an area which is being considered historically is helpful. On a higher level is the teaching of the region's past geography. For this purpose there is no substitute for a map contemporary with the period under discussion.

THE GEOGRAPHY OF NATIONS*

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A course in "Geography of Nations" is a type of regional geography. National boundaries will not always coincide with human use regions. Attention must constantly be given to that fact. A comprehension of the setting of nations in their physical framework will aid greatly in world understandings.

The following are some of the advantages in the study of the "Geography of Nations."

1. National divisions are the ones recognized by the radio, the press, the man on the street, the laborer, and the professional man. Such a course prepares the child to live intelligently with his fellowman.
2. The political and diplomatic world are concerned with national units. Producing areas become important to the world thru the media of nations.
3. Differing political ideologies are of national origin or are largely nationally circumscribed. To understand a world of diverse political thought children must be familiar with the national areas where such thoughts originate.
4. Citizenship is an attribute of nationality. To understand the value of his own citizenship the individual must know what citizenship means in other lands. The conflict and compromise of national citizenship and world citizenship are important in the world of today.
5. Much of the statistical factual knowledge of the world is on a national basis. This compels much of the world's thought to be circumscribed by national boundaries.
6. Over-developed nationalism is one of the causes of wars. A study of nations shows that the strength of nations depends largely on the resources and character of the earth base and not on the qualities of a master race. Such a concept will help deflate overemphasis upon nationalism.
7. A course in the "Geography of Nations" helps us understand the place and responsibility of nations in the world. Nations make wars and break the peace. Knowledge of the nations of the earth will aid each nation in seeing its own works and responsibilities in the world. Such knowledge is one of the rocks upon which a permanent peace must be founded.

* Abstract.

There are some disadvantages in the study of nations as organizing units. The artificial and unscientific character of national boundaries is sometimes a handicap in clear, logical, geographic thinking. The frequent shift of national boundaries is disconcerting. Altho these things make understandings more difficult, they do not change measurably the activities of people in relation to the earth base. This is a tie that holds the world steady.

It is difficult to select what nations should be studied. The selection must include the leading nations of the world or groups of related nations. Sufficient time must be available, so that the child can live long enough with one country that it becomes a real part of his educational thinking. To attain these two objectives two years' study is necessary. The first year may well be devoted to the Americas and the second to the rest of the world.

WORLD GEOGRAPHY*

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Altho the title "World or Global Geography" carries a new note of challenge one cannot escape the practical aspects associated with the offering of this course in the secondary school. Geographical education of the world type can satisfy many needs. The central theme of such a course as expressed by many leading geographers could well be the "general aim." It is to enable the secondary school pupil to realize the unity of the world, and to obtain a more scientific and special knowledge than was achieved in the elementary school of the environment in which other peoples live.

Two "measuring sticks" are suggested for teachers of such a course. They are the self-directed questions, "Is what I am teaching now leading to a better *world* understanding?" and "Can what I am presenting to my pupils now be taught in the same manner in Argentina, Germany, U.S.S.R., or any other political division of the world *without creating* bias or prejudice?" A world geography course taught in a democracy must draw affirmative replies to these two questions.

* Abstract.

The content of such a course should supply a "world frame of reference"; within that frame there should be population patterns, climate patterns, ways-of-life patterns, trade patterns; the frame should be for moving pictures,—not stills.

Definite organization of several courses now in operation or contemplated are given. One is arranged thus; Part I. Man's Relation to Some Elements of His Natural Environment, Part II. The Economic Geography of the United States and Canada, Part III. The Geography of Other Lands.

A second course devotes the first semester to The United States and Its World Relations, the second semester to Foreign Countries and their World Relations. The last part is a "World Summary."

A third course has a regional organization based on animal, plant, advanced plant, commercial and industrial types, of economies, finishing with the mining and complex industrial types.

A fourth course definitely directs study to world patterns, then interrelationships of world patterns, ending with some detailed work on regions current in the news. An accompanying check list should give a skillful teacher great aid in reaping the greatest rewards.

Since this course will be the "last" course in geography for most of the pupils it is extremely vital that they obtain from it a "world frame of reference."

READING IN GEOGRAPHY*

EDNA E. EISEN

Kent State University, Kent, Ohio

Many of the experiences necessary to have geography make its contribution to social education are acquired thru proper use of reading materials. Learning to read in geography includes reading of verbal material, landscape-reading, picture-reading, and map- and graph-reading. Reading is the ability to get "the big idea" from the printed page. There are special geographic reading skills and abilities which must be developed if understandings of a geographic nature are to be gleaned from the written page. It is the

* Abstract.

responsibility of all teachers of geography to direct the reading of their students in such a manner so that gradually and systematically they develop the reading techniques applicable to geography.

Textual materials include basic texts and supplementary books. The former are used for what is frequently termed "work-type" reading and the latter for recreatory reading. When students are led to feel that they are explorers and are making their own discoveries then all reading in the field of geography is "fun."

BASIC GEOGRAPHY TEXTS

Students do not realize for what they are supposed to read. They need to recognize that when they read they are to rediscover facts about the cultural environment and the natural environment and their associations in given places; to try to visualize how people live and work in these places; to understand the problems with which the people are coping; to understand how things are distributed; and how and why places differ.

The critical thing is guiding readers in the most effective ways of using basic text materials. Signposts along the road to successful guidance are relatively simple. One of the first says, *make it real*. Geography reading is not a story about imaginary people and places, but real people in a real world. *Reading readiness* is on another signpost. When new concepts have been developed and curiosity has been aroused so that the learner feels the need and has the desire to read to satisfy his curiosity, then there is "reading readiness." A third signpost says *directions for reading*. It is only as teachers indicate, time after time, as their students turn to their texts what it is they are to look for as they read that good reading habits are formed. *Record findings* says a fourth signpost. Stories, pictures, drawings, puzzles and games, discussions and other types of expression give the learner a chance to show that he understands and has advanced in gaining "the big ideas."

There are many types of activities which are part of learning to read in geography. Exercises need to be provided which make readers aware of the usefulness of side headings, of indexes, of tables, and other data in the appendixes of their books. These are all part of the responsibility of the teacher of geography.

SUPPLEMENTARY GEOGRAPHY READING MATERIAL

Supplementary reading materials are mainly to enrich the experiences and broaden the understandings gained from the study

in texts. These materials function best when the learner has some basic concepts and understandings about the people and places in which they live and himself feels the need and has the desire to enlarge his knowledge of some aspect of the regional personality.

For convenience, three kinds of supplementary materials are considered. First, there are those books, articles, picture collections, motion picture films, and maps (including atlases) written or prepared from a viewpoint of accurate geographic presentation. Second, there are those which altho non-geographic in major purpose, contain pertinent material contributing to geographic understandings. Third, there are those fictional materials with geographical backgrounds of varying degrees of accuracy.

Materials of the first type help to add that detail needed to give more reality to the regional study; to clarify some part of the work; to give a more intimate picture of some aspect of the life of the people. In the second group are a great many standard references which are of greatest value if their use grows out of interest created in the basic study. In connection with the great mass of material in the last group there is a *danger signal* all must heed who wish to develop sound geographic thinking so needed of every world citizen. It is not possible to gain geographic understandings about this world merely from reading stories about imaginary characters living in certain parts of the world. At all levels there are books of fiction which one reads for relaxation, purely recreatory in nature, that are enjoyed because they help make real some geographic factor. If thru our guiding young people to gain regional understandings, an interest in reading stories and seeing motion pictures about these peoples has been created, geographic knowledge will be advanced.

Reading in geography in its broadest sense is the basis for geographic thinking. It must be correctly directed.

THE PLACE OF MAPS IN SOCIAL EDUCATION*

KATHERYNE THOMAS WHITEMORE

State Teachers College

An intelligent citizen must use maps. From maps in newspapers and magazines, he obtains information on world and local affairs. Students in school also use maps as a source of information. If student and adult alike are to receive the full value from maps they must be able to read them easily and accurately.

Experiences in the use of maps occupy a large part of the time and attention in any program of social education, whether organized as separate courses in geography and history or in any degree of integration. These experiences are of two kinds; those that train in map reading skills and those in which maps are used as a source of information.

Before training in the reading of maps can begin, map reading readiness must exist. The child must have concepts of direction, distance, and actual objects before he can read the map symbols that stand for these concepts. Instruction in the use of maps must be carefully planned. It must develop gradually step by step in orderly sequence.

Maps are the most effective sources for much information. Types of map activities that help the students learn from maps include the observation of facts shown on maps, the use of work maps as study aids, and creative map activities. The mapping of data obtained by observation is a valuable form of creative map work since it helps the student appreciate maps as symbols of reality.

Maps may be used in many places in a unit of work. They may be used in the introduction to raise problems or in the summary where they permit the application of knowledge to a new situation. Population maps are especially effective used in this way. Maps can be used in evaluation, not only in testing the knowledge of locations of cities and rivers but broader geographic concepts such as the relation between transportation facilities and city development.

For an effective program of map work a well-prepared teacher is essential. Curriculum makers must leave time for work with maps. The supervisor must provide stimulation and materials, and make possible the continuity that insures growth from year to year.

* Abstract.

THE STILL PICTURE*

M. MELVINA SVEC

State Teachers College, Oswego, New York

The several kinds of still pictures provide a media of learning and contribute to understandings in social education. The flat picture, stereograph, slide, filmstrip, and transparency provide valuable sources of material by bringing views and news of local and remote regions of both time and place into the classroom. This is significant because geography concerns itself with the out-of-doors and with people. The still picture supplies one of the best representations of realities.

There are many characteristics common to all five kinds of still pictures. However, each has special merits and some limitations.

Pictures have a number of values. They can be used to clarify ideas, correct wrong impressions, provoke discussions, and raise questions. Pictures can bridge the gap between experience and understanding.

To develop the skill in reading geographic data from pictures involves an understanding of the geographic landscape. The geographic concepts that can be developed from a study of pictures depends upon the ability of the teacher to see and read from pictures the significant items and subtle implications. Then the teacher is able to guide and teach pupils to interpret picture information.

Pictures vary widely in their geographic quality. Top priority is given to pictures of the environment showing the natural and cultural landscape.

Pictures vary in grade placement in the matter of details and purposes for study. The degree to which a pupil discovers, reads, verbalizes, and interprets things seen in pictures tends to correspond in a measure to his growth in reading ability, to his growth in command of the common skills and to his growth in everyday living experiences.

The selection of pictures is concerned with quality, size, authenticity and scale. While variety in selection is desirable those pictures depicting the common denominator of ways of working and living are to be desired rather than those showing the least common.

It is possible and desirable to use pictures thruout the study of a topic or unit. The purpose for which pictures are used affects

* Abstract.

the time and manner of use. Pictures need to be correlated with map work to provide experiences in visualizing map symbols as real things in a living world.

The results of a number of studies indicate that group work with pictures is a more effective learning situation than individual picture study.

Too long teachers have assumed that pupils of their own accord study pictures and learn from this experience. Evidence seems to indicate that teachers need to teach pupils to read useful geographic information from pictures above and beyond the ideas suggested in the captions.

ANNUAL MEETING OF THE THIRTY-THIRD YEAR NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

The meeting of the thirty-third year of the National Council of Geography Teachers contributed greatly to the development of thought in the field of geographic education. The meeting was held at the University of Virginia, Charlottesville, on December 27, 28, and 29. One hundred and seventy-five members of the National Council were registered.

The opening session was held jointly with the American Society for Professional Geographers and the Association of American Geographers in Cabell Hall Auditorium, with Professor Sidman P. Poole presiding. Raus M. Hanson, of Madison College, Harrisonburg, Virginia, President of the Virginia Geographical Society made the opening welcoming address. President Alfred H. Meyer responded on behalf of the three geographic societies. The Honorable Edward R. Stettinius, Jr., Rector of the University of Virginia addressed the group on the importance of geographers in business and political affairs.

The opening meeting was followed by four sectional meetings devoted to (1) Geographic Instruction in the Elementary School, (2) Geographic Instruction in the Secondary School, (3) Geographic Instruction in the Undergraduate College Curriculum, and (4) Geographic Instruction in the Graduate School. The papers which were read in the first two sectional meetings are to be included in the 1948 Yearbook of the National Council for the Social Studies. Time was permitted for suggestions to be made by National Council of Geography Teachers members for editorial purposes.

The annual banquet was held jointly with the American Society for Professional Geographers on Saturday evening, December 27, at the Monticello Hotel. Professor Poole served as toastmaster. The Honorable Colgate W. Darden, President of the University of Virginia welcomed the group. Miss Edith P. Parker presented a paper on "The Purpose of Social Education." This paper is to appear in full in the Yearbook. Alfred H. Meyer, President of the National Council of Geography Teachers discussed "The Fulbright Act and its Geographic Significance," and Otis P. Starkey, President of the American Society for Professional Geographers, read a paper entitled "Let's Keep Out of the Ivory Tower." The banquet was followed by an informal reception for Past Presidents of

the National Council of Geography Teachers and the American Society for Professional Geographers.

On Sunday, December 28, members of the National Council of Geography Teachers participated in a field trip arranged by the School of Geography of the University of Virginia. Approximately one hundred and fifty persons went on this trip. It was followed by a buffet supper at the Monticello Hotel for members of all three geographic organizations.

On Monday morning, December 30, the members of the National Council met with the American Society for Professional Geographers and the Association of American Geographers in a joint session which dealt with "Geographers in the National Defense Program." Army and Navy officers addressed the group.

The General Assembly of the National Council was held at eleven o'clock on Monday morning, President Alfred H. Meyer presiding. (See Secretary's Report of General Assembly). This was followed by a Coordinator's luncheon in the Rotunda. Reports of State Coordinators and those of the special Coordinators with other professional organizations were presented.

Two sectional meetings in the afternoon brought the meeting of the thirty-third year of the National Council to a successful close. The papers presented in Section One dealt with "Training Geographers for Professions other than Teaching." These papers are to appear in a volume to be published by the National Council in the near future. Those read at the second sectional meeting dealt with "Basic Skills in Geographic Instruction" and are to be included in the 1948 Yearbook.

During the meetings a commercial exhibit was sponsored by the National Council. Publications in the field of geography were submitted by twenty-five publishing firms and were on display in Minor Hall. The funds raised in this manner have been turned over to the Publication Fund of the National Council.

MINUTES OF THE FIRST GENERAL ASSEMBLY OF THE NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

The first General Assembly of the National Council of Geography Teachers was held at eleven o'clock on Monday, December 30, 1947, in Minor Hall Auditorium, University of Virginia, Charlottesville, Virginia, with President Alfred H. Meyer presiding. Dr. Meyer opened the meeting with a welcome to the members and extended his thanks to the officers and members who had so generously given of their time and effort during the past year to National Council affairs.

The Secretary presented a report on membership and on his activities as Secretary during 1947.

President Meyer reported on the selections made by the Geography Prize committees for the Richard Edwood Dodge Prize, the Ray Hughes Whitbeck Prize, the George J. Miller Prize and the J. Paul Goode Prize. These prizes (except for the J. Paul Goode Prize) were announced in the January, 1947, issue of the *JOURNAL OF GEOGRAPHY*. The recipients of these four prizes follow.

The Dodge Prize was awarded to Dr. Otis W. Freeman for his article entitled "The Pacific Island World" (January, 1945).

The Whitbeck Prize was awarded to Dr. Bruno Lasker, for his article entitled "Mineral Resources of Southeast Asia" (November, 1943).

The Miller Prize was awarded to Dr. J. R. Whitaker for his article entitled "Design for High School Geography" (November, 1944).

The Goode Prize was awarded to Dr. Erwin Raisz, for his article entitled "Landform, Landscape, Land-Use, and Land-Type Maps" (March, 1946).

Dr. George B. Cressey announced the meeting of the International Geographical Union in Lisbon, Portugal in September, 1948. He also urged the Council to join other professional groups in inviting the International Geographical Union to hold its 1952 meeting in the United States. It was moved and seconded that the National Council officially delegate two members of the National Council who plan to attend the International Geographical Union meeting at Lisbon to represent this organization. The motion was carried. It was requested that any members planning to attend the Congress communicate with President Tom Barton, Indiana University, Bloomington, Indiana.

It was further moved that the National Council join with the National Research Council and other professional groups in this country to invite the International Geographical Union to hold its meeting in the United States in 1952. The motion was carried and the Secretary was empowered to extend this invitation.

Dr. John H. Garland presented a report on the financial affairs of the National Council.

The *Resolutions Committee* read the following report and moved that it be accepted. The motion was carried.

Be it Resolved:

At this meeting of the thirty-third year of the National Council of Geography Teachers, we take this opportunity to thank The Honorable Colgate W. Darden, President of the University of Virginia, and other officials of the University for their cordial reception of our organization and for their genuine hospitality.

To express our appreciation for the opportunity of having been greeted by the distinguished Rector of the University of Virginia, The Honorable Edward R. Stettinius, Jr., and to learn of his deep personal and professional interest in geography.

To extend our deep appreciation to Colonel Poole and Mrs. Poole and to Colonel Poole's associates in the School of Geography and the Virginia Geographical Institute for their splendid efforts in having made this session such a success.

To thank President Meyer and the other officers of the National Council of Geography Teachers for their leadership thruout the year and for the well planned program that has brought the work of the year to this successful conclusion.

PRESTON E. JAMES, *Chairman*

MELVINA SVEC

ALDEN CUTSHALL

Mrs. Katheryne T. Whittemore reported on the work of the Yearbook Committee. Its report was printed and circulated among members of the National Council at the time of registration. The report was approved as printed.

The Nominating Committee submitted the following slate of candidates for office in 1948-49.

President: Thomas F. Barton

First Vice-President: Earl Shaw

Second Vice-President: Loyal Durand, Jr.

Secretary: Clyde F. Kohn

Treasurer: John H. Garland

Executive Board (for three-year terms):

Mamie L. Anderzhon

Henry J. Warman

Kenneth Bertrand (to fulfill unexpired term of Loyal Durand)

It was moved and seconded that the Secretary be instructed to cast a unanimous ballot for the candidates presented by the Nominating Committee. The motion carried.

Mrs. Erna Grassmuck Gilland, Secretary of the Committee on

Geographic Education for World Understanding, presented the report on the work of this Committee. This report was printed and distributed to the members of the National Council at the time of registration. Mrs. Gilland supplemented the report with additional remarks and answered questions pertaining to it. Her report was heartily approved.

The meeting was then adjourned.

Respectfully submitted,
CLYDE F. KOHN, Secretary

THE NATIONAL COUNCIL AT WORK

ANNUAL MEETING, 1948

The National Council of Geography Teachers will hold its Thirty-Fourth Annual Meeting Friday and Saturday, November 26 and 27 in Chicago, Illinois. Sessions will be held in the Palmer House, where living accommodations are also available. The National Council for the Social Studies will also meet at Thanksgiving time and will have its headquarters in the same hotel.

PROGRAM THEME AND PAPERS

Sometime in the future, a central theme for the annual program will be selected. Will members please send me suggestions of papers they would like to prepare or papers they would like to hear? During the past two years, we have had sectional meetings. What is your reaction to such meetings?

COMMITTEE ON PREPARATION OF PUBLICATION ON THE PLACE OF GEOGRAPHY IN TRAINING FOR BUSINESS AND PROFESSIONS

The Executive Board at its second meeting in Charlottesville approved the recommendation of the Planning Committee which reads as follows: "It is recommended that a committee of three be appointed to compile material for a publication on this subject. It should proceed by: (1) reviewing papers presented at meetings of the NCGT and selecting those suitable for publication (2) encouraging the preparation of articles needed for a well-rounded presentation of the subject and (3) presenting to the Executive Board a plan for such a publication and for its distribution."

Dr. Alfred H. Meyer, Valparaiso University, is chairman of this committee. Dr. Earl B. Shaw and Professor George J. Miller are the other two members.

ENDORSE NATIONAL SCIENTIFIC ATLAS

Dr. Alfred H. Meyer sent the following message to Dr. J. K. Wright of The American Geographical Society: "This is to advise that at a meeting of the Executive Board of the NCGT at Charlottesville a motion was passed that we endorse the National Scientific Atlas suggested by the AAG and the ASPG."

GEOGRAPHY TEST

At the second meeting of the Executive Board in Charlottesville, Miss Marguerite Uttley, State Teachers College, Cedar Falls, presented the report of the Committee on Tests. She recommended that: (1) tests should not be for specific grade levels; (2) another test if made should be standardized before it is published; (3) more publicity should be given to future tests; and (4) the price of future tests should be lower for small quantities than the present Fourth Grade test.

Miss Marguerite Uttley and the committee on tests were instructed by the Executive Board to prepare a test not for one grade but probably for the fifth, sixth, and seventh grades and apply to the Research Committee for the necessary funds.

DATE LINE FOR THIS PAGE

Material for this page is mailed to Editor Miller on or about the twelfth of each month preceding the month it is to appear in the JOURNAL OF GEOGRAPHY. Will committee chairmen and others who would like to have an announcement or paragraph appear on this page please send in the material by the tenth of the month.

THOMAS F. BARTON, *President*

EDITORIAL NOTES AND NEWS

In order to enable more teachers and students to enjoy the benefits of membership in the American Geographical Society than is now the case, the Executive Committee of the Society has recently extended to: 1) Members of the National Council of Geography Teachers, and 2) Students regularly enrolled in educational institutions the privilege of election as Fellows (i.e. members) of the Society upon payment of \$7.00 in annual dues, the regular rate being \$10. Hitherto this special rate has been made available only to members of the Association of American Geographers and of the American Society for Professional Geographers.

Fellows receive the *Geographical Review* and other publications of the Society and enjoy certain other privileges.

Members of the National Council of Geography Teachers and students wishing to avail themselves of the special rate will received upon request a formal invitation, together with an application blank and a descriptive circular listing the publications offered free to Fellows. In making this request, members of the National Council should so indicate; students should name the university, college, or school at which they are enrolled, and indicate their class. Address, American Geographical Society, Broadway at 156th Street, New York City 32.

Gamma Theta Upsilon, National Professional Geography Fraternity, has granted charters and installed chapters in the following colleges and universities: Sigma, University of Kentucky, Lexington, Kentucky; Tau, Indiana University, Bloomington, Indiana; and Upsilon, Bowling Green State University, Bowling Green, Ohio.

Any school wanting to secure information in regard to the installation of chapters of Gamma Theta Upsilon should address such inquiries to Doctor Warren Strain, State Teachers College, Slippery Rock, Pennsylvania.

DR. OTIS W. FREEMAN, from Eastern Washington College of Education, Cheney, Washington, has been appointed a Specialist for Geography in Higher Education in the United States Office of Education. A prospectus of the program of work in which Dr. Freeman will participate was outlined in "Editorial Notes and News" in the November, 1947, issue of the JOURNAL. Dr. Freeman expects to return to Cheney for the summer session of the College.

MISS ELIZABETH EISELEN of Wellesley College writes that the New England Geographical Conference is to hold its next meeting on May 8, at Wellesley College. The meetings are open to all interested persons. For further particulars write to Dr. Donald H. Chapman, Secretary-Treasurer of the Conference, University of New Hampshire, Durham, New Hampshire.

The Winter News Letter of the Department of Geography, Syracuse University, Syracuse, New York, announces that Syracuse and Northwestern Universities will again cooperate in offering field training next August with the field camp at Lannon Fields Farm, about seventeen miles northwest of Milwaukee. The following professors are tentatively reported to be in charge of the program: Preston E. James of Syracuse, and William A. Powers and Clyde F. Kohn of Northwestern.

If interested in background material for various foreign areas, especially those in Europe, write to the Division of Public Liaison, Office of Public Affairs, Department of State, Washington 25, D.C., for a list of their pamphlets. Some are free, others may be secured at a nominal cost from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.

It is reported that American rubber companies used more than a million tons of synthetic and natural rubber in 1947.

Statistics compiled by the Social Security Administration reveals that the natural increase in population in the United States in 1947 was more than double that for each year from 1930 to 1940. About 3.9 million babies were born in the United States in 1947, or about 27 babies for every thousand people.

If interested, elementary teachers may receive a free copy of the Teachers Service Bulletin in Geography. The first issue appeared in October. It is available from The Macmillan Company, 60 Fifth Ave., New York 11, or from one of its branch offices.

In view of the congressional debates on the St. Lawrence Seaway Project, you may wish to secure this publication: Industry Report, Domestic Transportation, An Appraisal of the St. Lawrence Seaway Project. It was prepared last summer by the Transportation Division, Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington 25, D.C. The pamphlet includes a description of the Seaway; analyses of the potential traffic in iron ore, grain, coal, and petroleum; estimates of the number of vessels that can be accommodated daily thru the canals, and probable charges.

The annual meeting of the New York State Geographical Association will be held April 24-25 at Colgate University, Hamilton, New York. The headquarters will be at Colgate Inn and sessions at Lathrop Hall. The tentative morning program includes a panel discussion on the teaching of local geography in the schools and colleges of New York State. In the afternoon papers will be read on the geography of the state. The dinner speaker is Dr. Robert D. Dickinson, University of London, Visiting Professor at Syracuse University. On Sunday at 9:00 A.M. the group will leave for a field trip into the Chenango Valley. For further particulars, write to the Secretary, M. Melvina Svec, State Teachers College, Oswego, New York.

GEOGRAPHICAL PUBLICATIONS

Satis N. Coleman. *Volcanoes, New and Old*. 222 pp. Illustrated. The John Day Company, New York. 1946. \$3.75

The story of some eighty volcanoes, including a description of the action of Paricutin as seen by the author. She reviews briefly the theories concerning the causes of volcanoes as expressed by volcanologists, and then cites particular instances of how active volcanoes behave that corroborate these theories. The volcanoes selected are chosen from widely distributed areas. In some cases brief mention is made of the loss of life and property, especially those of the past. Other instances bring out the beauty and interest in volcanoes that have resulted in the development of the tourist industry. Other references briefly indicate present and potential uses of the vast amount of heat and energy confined in the earth awaiting man's ability to harness them. The lay reader will probably enjoy the book and wish to visit some of the areas described.

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GEOGRAPHY AS AN ELEMENT IN GENERAL EDUCATION*

NELS A. BENGTON

University of Nebraska

Until the latter part of the nineteenth century American colleges were, to a considerable extent, continuations of the earlier idea of serving primarily for the development of an intellectual aristocracy. They were supposed to be the means of entrance into the learned professions rather than as institutions to serve the general public. The high school, usually under the guise of an academy, earlier had served a similar purpose of being the preparatory school for college, but before the turn of the century it had begun to win recognition as an administrative instrument for promoting general education for the masses. It had won recognition as the "people's college" because the percentage of students who went on to college was small indeed.

Colleges were then characterized by narrowly-prescribed courses of study, with much emphasis upon the classics and on ancient history and philosophy. Mathematics was taught because of its presumed disciplinary value, and the sciences had received some recognition, particularly in their relation to medicine. Curricula built up under these ideas and ideals did not serve the purpose of general intellectual progress, and thus became charged with meeting inadequately the responsibility of the developing view that college education should serve the masses as well as the professionals. Thus was prepared the ground for change, a change that proved to be a radical departure from the prevailing prescribed curricula, because it led to the establishment of the elective system carried on with little restraint under the general principle that whatever is of interest to man is worthy of study on the higher level.

* Presented at the annual meeting of the National Council of Geography Teachers, University of Virginia, December, 1947.

The elective system for which President Eliot of Harvard became the avowed and recognized leader was a call for adaptation to changing needs of education for citizenship, a call made and led at an opportune moment. The elective system was a protest on the part of the democratically minded educators against the prescribed and closely limited programs that long had been dominant. Preparation for the ministry or the other learned professions such as law and medicine did not meet the demand for the preparation for citizenship on the part of the masses nor for the needs of rapidly expanding science.

The elective system is now judged by many to have been a movement of too broad amplitude for sound educational progress, but whatever may have been its faults, the principle of election of courses by students led to a greatly increased interest in higher education by more people, and it also induced increased financial support. While students were given wide freedom of choice of subjects to be taken, they were not given competent guidance in selecting programs of study, and thus there was lacking one of the fundamental requisites, pronounced by President Eliot when he said: "The best education is that which the student works out for himself, under competent guidance."

As the abuses of the free elective system became recognized, the general plan was modified by increased specific requirements and greater attention was paid to prerequisites for advanced subjects. Thus was developed the system of majors and minors, or field of concentration, a system still in vogue in a large percentage of American colleges. Introductory courses were developed as a first step in a scheme of specialization. The insistence upon prerequisites in strictly sequential subjects such as mathematics, modern language, and physics, led to the pronouncement by nearly all disciplines that there was a best way of beginning every subject and that this "best way" should be used whether students were laying the foundation for specialization in that field or would use it merely as a minor element in the college career. This led to the formulation of introductory courses, which were but beginning courses in practically every subject or department of the college. The weakness of that system was and is apparent, in that the presumed breadth of culture acquired during underclassmen years was based on beginning courses in several departments, none of which was an entity in itself. Altho the claim was made that the first year's work

was of broad cultural value, the very fact that students were continually implored by nearly every department to take additional work was testimony to the lack of entity in the beginning course. It seems quite doubtful that breadth of culture can be acquired by taking a dozen courses geared to the freshman level of thinking, with no courses being considered even by the departments themselves as being complete units. This general plan of distribution of elementary courses and tool subjects during underclassmen years and concentration as majors and minors during the upperclassmen years has been dominant in this country during the past quarter of a century or longer.

TRENDS IN GUIDANCE PROCEDURES

Prior to World War I there had developed, particularly among psychologists, experimental procedures for throwing some light on the aptitudes and interests of young students. The exigency of war gave opportunity for trying out on a larger scale some of the procedures that had been worked out prior to that time on experimental bases only. The results of interest and aptitude testing thus carried out under the auspices of the armed forces gave values of such significance that officers in charge were convinced of the soundness of the general idea and they became interested in the need for further study and specialization along this line. Business likewise indicated an interest in the new movement. The results were sufficiently encouraging to lead to rather extensive study and research in some American colleges, among which the state universities of Ohio, Iowa, and Minnesota became recognized as pioneers in the new movement. Thru experimentation and experience the significance of testing and counseling became widely recognized, and at a time when the American college had won recognition as an instrument for the development of citizenship on a much broader scale than that of merely preparing for the learned professions or of building up an intellectual aristocracy for leadership in American life and culture. The college during the 20th century had won its place as an institution for education for citizenship and for the development of skills based upon adequate preparation in such widely divergent fields as business, agriculture, forestry, mining, and the diverse realms of technology.

The experiences thus outlined, and the expanded goals to be sought in education have led to further dissatisfaction with under-

classmen years devoted almost exclusively to specialized beginning courses. During the decade of the present century in connection with this changing aspect of the American college, geography has made its greatest advance, and has won wide acceptance because of its broad scope of interest and its recognition of the interdependence of physical, economic, and social factors. The very aspects which earlier had caused professionals in the older disciplines to look with disfavor upon it because it appeared to be too inclusive and loose-jointed are now proving to be advantageous for its acceptance, because of the demand for a broader and more intelligent understanding of life in its various aspects.

The dissatisfaction with specialized, highly departmentalized beginning courses led to the formulation of interdepartmental courses wherein each of related disciplines was expected to contribute critical material and its point of view. These became known as survey courses which were designed to be complete units in their respective fields. This plan is still being attempted in a number of institutions. It has, however, encountered disfavor in many instances because of its reputed shallowness and because of the prevalence of disjointed segments, each presented by an instructor independent of his colleagues in the course carried. The lectures in many instances were given by departmental representatives, specialists in their own fields, but not interested in related phases, and thus the topics were not closely woven into the over-all fabric of the course. Where the request for broader foundation work was met by procedures such as these, failures have resulted and in a few cases return to the former beginning course system has resulted.

DEMAND FOR INTEGRATION OR UNIFICATION

There seems, however, to be a widespread acceptance of the fact that the failures just referred to were failures of procedure or of administration, and were not due to a mistaken philosophy in regard to the goal to be sought. The correction, as viewed by many careful students, seems to warrant experiments in change of procedure rather than abandonment of the principle. Thus has come the demand which now appears to hold the spotlight; namely, a demand for unification or integration in a given course along broader lines than individual departmental boundaries. There seems to be the call that the integrated courses should not be small bits of individual disciplines, but should be based upon larger prob-

lems, either topical or areal in nature, to which the points of view of the different disciplines might be directed. Thus a problem in mechanics could be set up, and would need consideration from the viewpoints of physics, chemistry, mathematics and engineering, and there could be exemplified fundamental principles of each involved, as applied to a specific problem. Another instance could be mentioned wherein the problem of an area would receive attention, an area such as the Great Plains of the United States, or a country, like France or India, and then apply to it the viewpoints of geography, of social and economic development, of political status, and of population. Thru such means could be exemplified the need for studying the problem from the various points of view before reaching any kind of conclusion. The preceding is an attempt to present the picture that lies back of the demands now being placed on American colleges for a sounder and more broadening type of underclassmen program. Such a program should serve as a basis for concentration along some field in the later years of the undergraduate college, and this should provide a sound basis for making a living, and for the promotion of high quality citizenship without sacrificing the opportunity for specialization on the graduate level by the minority who will proceed into that realm.

A RÉSUMÉ OF THE PRESENT SITUATION WITH RESPECT TO GENERAL EDUCATION COURSES

Since neither time nor facilities were available for making a careful and complete survey of the work of all American colleges the writer deemed it advisable to make a spot check of the present situation in this country, based upon an investigation of 30 colleges of fully accredited standing, most of them so-called Class A institutions, scattered from Massachusetts to California and from Louisiana to Minnesota. This was supplemented by more detailed examination of the offerings of 46 colleges located within the so-called Missouri Valley area, and with which the present writer is more directly familiar. As a result of this spot-check investigation, the following findings may be reported as reasonably accurate:

1. About 70 per cent of the colleges report general courses available for freshmen and sophomores, some of them required, and some of them optional in connection with the common beginning courses in liberal arts curricula.
2. There seems to be no prevalent type of management that can

be said to be characteristic of the country at large. In most cases the so-called general courses are handled by teaching members chosen from various departments and not responsible to any one chairman. In some cases these teaching members constitute a committee, with the committee responsible directly to the Dean of the College. In two or three instances the general course is in charge of a special chairman, of equal prestige with other department heads.

3. The lecture rather than the discussion system seems to prevail, but several colleges among the 30 in the first group indicate that where a class meets three or four times a week one or two of the meetings are conducted on a discussion basis with small groups, the class as a whole being broken up into groups of about 20 for such purpose.
4. A closer unification of the elements of the course seems to prevail where the number of departments concerned is not more than two, as is the case usually where geography and geology combine to give a course in earth science or botany and zoology combine into biology, than where three or more disciplines are involved.
5. The trend seems to be toward closer unification of content and method of instruction. This is reflected in the tendency toward placing one man in general charge of a course, even where different individuals meet classes for lectures on certain aspects of the course content.
6. There is a growing tendency toward increasing the discus-sional aspects of the work. This is indicated by the tendency to give a limited number of lectures on critical topics and toward increasing the number of small sections for discussion and quiz under the leadership of younger staff members.
7. The colleges that earliest adopted plans of general courses gave geography little or no representation in their programs. This is notably true of Columbia, Chicago, and Southern Methodist University. Colleges that have undertaken synthesized programs more recently appear to give prominence to geography in such courses; this is exemplified by Colgate, Northwestern, and Iowa State University.

THE PLACE AND FUNCTION OF GEOGRAPHY IN INTEGRATED COURSES

General Education is a term used widely to refer to the programs of the first two years of liberal arts curricula. As previously

stated, these two years have been devoted chiefly to beginning courses in several different fields either under guidance of advisers or under some form of distribution as groups of subjects presumably closely related or somewhat similar in point of view. This system has long been exemplified by Harvard, Princeton, Virginia, Wisconsin, Indiana, Kansas, and Colorado universities. In all of the above named geography has won recognition as a science or a social science as is true of nearly all other colleges and universities where the teaching staffs include competent geographers. In a number of cases courses in geography are accepted in both the science and social studies groups, a recognition of the dual function which the subject in its separate phases serves.

However, the difficulties of attaining sound educational objectives thru adding up individual courses began to impress educators more than two decades ago. In the movement for interdepartmental courses, the University of Chicago soon became recognized as the outstanding leader because of its thoro-going curricular reorganization and the careful preparation of its general courses which were to dominate the College. It still holds high rank in this regard. Perhaps Columbia should be given equal rank as early trying out the idea of some general courses, and its present two-year program on contemporary civilization testifies to the general approval of this course by its faculty and student body. Southern Methodist University early introduced a required course in Social Science and recent reports indicate that it continues to hold the respect of the faculty of that institution. It seems that either the geographers of the institutions concerned were not included in the planning of the general courses, or they did not favor merging the subject in such programs because geography takes little or no part in them now.

That general courses not confined within the accepted limits of departmental disciplines are becoming more widely favored than heretofore is indicated by recent actions of a number of front rank colleges and universities. Notable among the institutions that in recent years have adopted and are now using general courses as basic during the freshman and sophomore years are Colgate, Northwestern, Johns Hopkins, and the State University of Iowa. In liberal arts colleges of these universities geography takes a prominent part in one or two of the general courses provided in the realms of natural science and the social studies. Reports from faculty members indicate a prevailing sentiment of approval of the

objective sought and of results attained thus far.

Further evidence of the increasing favor with which the movement for general education is advancing is indicated by reports from Washington University at St. Louis, University of California at Los Angeles, and the State Universities of Colorado and Wisconsin, as well as from several others that could be named. In these instances faculty actions have definitely approved the principle of general education on the lower level, have recommended grouping of departments involved, and are reported to be preparing the syllabi to be used. In all cases reported, integration of the work toward agreed upon objectives is the *sine qua non* for acceptance. The charge of breadth without penetrating insight, made against the earlier survey courses, is thus to be invalidated.

In all the cases of colleges and universities reported to have undertaken the plan of preparing general education programs since 1940, the principle of close integration of subject matter appears to have been emphasized. Likewise in all cases reported where college instruction in geography is available and adequately staffed, geographers appear to have been called upon for participation in planning and in developing the content of the programs. The recognition thus accorded the geographic discipline is much more than a merited honor, it involves an academic responsibility that demands most serious consideration.

How can geography best meet the responsibility which the changing scene has placed upon it? This is the problem which seems to demand the thoughtful attention of all who profess competence in our common discipline. Upon what basis or bases may we claim that geography contributes toward integration in a manner that is unique as well as comprehensive? Perhaps since geography is accepted by many as having a continuing "golden thread" in the realm of the natural sciences, and also of serving in similar capacity in the social studies, the significance of such threads should be somewhat definitely stated. Should we not revert to the idea effectively advanced by Kant when he called attention to history as encompassing the unifying element of time, and to geography as providing the unifying element of space? Louisiana State University has given official acceptance of this concept in its adoption of a requirement in the Junior Division that all students take a year's work of either geography or history on a three-hour per semester plan. There the geography is given on a regional basis. It

presents the Polar World and Europe during the first and the rest of the world during the second semester of the freshman year. The culture regions are integrated with the larger features of the natural regions, and thus the significance of spatial distribution provides a unifying influence that encompasses the world.

Two other examples of programs seem to warrant attention now, one that is in operation at Colgate University, the other at the State University of Iowa. They both emphasize the regional aspect of geography, and appear to differ principally in their choice of regions to be studied.

Colgate, after some years of experience with survey courses is reported to have turned toward unification thru choice of problems which will call for the use of different points of view in their consideration. While all students take part in the broader discussion of these problems each must choose one or more for more intensive probing. Perhaps the most representative line centers about area studies. During the current year each student is expected to spend two class hours per week on a unit chosen from a group such as Latin America, Soviet Union, Britain and the British Commonwealth, or Japan, and others of similar import. One class hour per week students meet together for lectures on the broader topic World Wide Issues of Our Time. The chief feature of this plan seems to be that it combines a broad presentation of a general field with an intensive consideration of a chosen segment of it wherein the points of view of distinctive disciplines are presented.

At the State University of Iowa the general education program was inaugurated just prior to World War II. Geography participated in the social science course from the outset, and later was asked to contribute also to the general courses in the biological and the physical science courses. Thus both the systematic and the regional aspects of the subject have won recognition as contributing vital elements in the general education program. In the Social Science course the presentation of regional analysis as an integrating medium was accepted and, since student familiarity with the subject matter seemed desirable, it was decided to base the content on continental United States with emphasis upon regional interdependence and upon international relations. Regional analysis necessarily involves economic, social, and political factors as well as geographic, and thus provides the integrated approach usually

avored by those who desire a broader view than is likely to be attained by separate beginning courses, and it obviates the tendency toward the shallowness charged against some survey courses. Every area whether large or small, simple or complex, may be analyzed upon a regional basis. As the first steps in such a course a region devoid of complexity should be selected and then by proper choice in response to developed interests progress can be made into regions of greater complexity and more diverse problems. Some have found the home community to be a favorable area for the first studies in this type of integrated procedure.

The preceding paragraphs are intended to present a résumé of the increasing extent to which geography is being called to contribute to the realm of general education. In virtually all the major colleges and universities, particularly in liberal arts, business administration, and teachers colleges of the larger universities geography is considered to be a vital element in general education whether the plan followed be that of separate courses in the several subjects, the survey courses of related departments, or the closely integrated programs now apparently winning favor. The question that merits further consideration under the conditions of rapidly changing scenes in economic affairs, political outlooks, and educational policies is that of the major contribution that should be expected of geography in the plan of general education.

The prevalent grouping of subjects in the general education plans include the humanities, the natural sciences, and the social sciences. Geography is ordinarily included in the social sciences and in many cases is likewise included in the natural sciences. Specifically therefore the ultimate question presents itself as "What can geography contribute to general courses that will enrich them and yet not be a duplication of what could be done as well or perhaps better by some other discipline?" The answer appears to have been given concisely and effectively by Zierer in a recent expression: "It is my opinion that the most important contribution which geography might make to these integrated courses would be to give students a concept of the regional approach. This would help to balance the systematic approach which will be demonstrated by most other departments." When we bear in mind the participation of geography in the groups of natural sciences, is it presumptuous on our part to undertake to

¹ Personal letter to the writer.

present the *total* resource base of the earth or of parts of it as our unique contribution to the general program?

In the social studies group geography makes its most effective contribution as it integrates the multiple features of the earth into regional patterns which are clearly understandable. This has been well stated by Trewartha: "This matter of *place*, emphasizing the exact distribution of things on the earth, is a distinctive contribution which geography can make in general education."²

The concept of geography as fundamentally regional in nature, often termed the study of area, has won widespread recognition. It is largely acceptance of Kant's thesis presented nearly two centuries ago and may properly be designated as the core of the geographical field. When one seeks knowledge regarding Tierra del Fuego or Afghanistan the geographers' works are the sources sought. The geographer is expected to describe and interpret the surface features, the climate, the more important plant and animal groups, the resources, industries and products, trade and transport, the inhabitants and political aspects, and these must be presented not as isolated bits of knowledge but as correlated items in their interdependent relationships, because it is thus that they constitute the landscape and manifest the activities of the region.

As a field of thoughtful knowledge geography emphasizes the interrelationships of environmental factors and the interdependence of regions and of nations. In any program of general education, whether presented singly or in cooperation with related disciplines it is a fundamental subject and provides the "golden thread" of integration. It places before the minds of students a wholesome philosophy of life and draws their attention into the channels of consideration and tolerance, as well as into the realm of understanding points of view other than those held as a result of their own limited experiences. May we not have faith that with better understanding of regional and international differences a finer type of international relationships may develop?

² Personal letter to the writer.

GEOGRAPHY IN INTERDEPARTMENTAL CURRICULA*

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For many years the cry has been heard that the departmentalization of studies in American universities has gone too far. So extreme was the departmental isolationism in my Alma Mater in the twenties that, in completing my major, I was required to take only two or three courses outside of my department. Only the accident that I changed major three times enabled me to get something resembling a liberal education. Along with extreme departmentalization went a proliferation of courses, so that one could take, for example, a course on life insurance, followed by one on casualty insurance, followed by one on fire insurance, and so on, ad infinitum.

Efforts to break down the barriers between departments have taken various forms. One is the grouping of departments into "divisions." Creation of divisions has served some useful purposes. Yet departments remain the fundamental units of the university in nearly every case. The department, not the division, commands the prime loyalty of its members.

A second cure for departmental tunnel vision is the survey course. I will not attempt to discuss survey courses, tho they present many of the same problems of coordination as do interdepartmental curricula. The survey course is gaining popularity as a means of giving the student a broad view of such a field as natural science rather than a somewhat more complete but still very elementary knowledge of a fragment of it. Survey courses, however, are confined almost entirely to the freshman and sophomore years. They cannot carry the full content, and much less the discipline and philosophy, of an undergraduate major, to say nothing of a program leading to a graduate degree.

To provide cross-disciplinary training and research on a formal and permanent basis at higher levels, two main plans are available. One is the institute, the other the interdepartmental curriculum. The two are not mutually exclusive. Sometimes the difference is merely titular. Generally speaking, an institute has its own funds and its own staff, tho its appointees may also be

* Presented at the annual meeting of the National Council of Geography Teachers, University of Virginia, December, 1947.

members of departments. In institutes, research and graduate training almost always are more important than undergraduate teaching and some institutes have no teaching functions at all. Interdepartmental curricula are quite varied in plan. Some interdepartmental programs have funds and staffs of their own. Some are offered by what an Irishman might call "an interdepartmental department," like a Department of Far Eastern Studies. At the other extreme are curricula set up without any expense, by simply bringing together courses already in the catalog. In any case, teaching is obviously the primary function of an interdepartmental curriculum, tho cross-disciplinary research is often a desired by-product.

THE DOUBLE DEGREE

The simplest type of interdepartmental curriculum is one leading to a double degree. Degrees in such combinations as History and International Relations have been given for many years. Usually such curricula represent simply a combination of courses given by two departments and they are operated at no extra cost to the university. But this is not said to belittle them. It is true that the interdepartmental degree sometimes makes strange bedfellows. I recall one major in geography and accounting! But usually such curricula are legitimate and provide a valuable link between related fields.

I feel that geography would profit if we encouraged double degrees, with almost any of the social and natural sciences and the humanities as the companion subject. The other field would benefit, too. If we wish to obtain the benefits of the double degree without the trouble of formalizing a curriculum, we can do so by requiring a smaller number of courses in the geography department and encouraging a purposeful choice of electives in a related field.

In the past, geographers could legitimately complain that they received too much of their instruction from non-geographers. Many of us, when we were graduated, were better geologists than we were geographers. But the reaction from geologically-trained geographers towards geographically-trained geographers may have gone too far. Geographers appear on the scene who have learned their geology from geographers, their economics (such as it is) from geographers, their anthropology and botany and politics from geographers. The curriculum becomes crowded with courses on the geography of this, that, and every place and topic, often taught by men with little competence in the subject.

In the course of our stock-taking of geographical curricula, we should consider the advisability of pruning the adventitious growths. To do so would give the student more time to work in related fields and would permit the faculty to concentrate on the subjects they really like and feel fully competent to teach. I do not advocate the elimination of courses essential to sound geographical method and discipline. I would not like to see economic geographers ignorant of soils or climatologists ignorant of crop distributions. But it seems to me possible to design a geography curriculum which emphasizes purpose, method, and discipline, rather than miscellaneous information. This core curriculum would give time for a wide and sound background in the natural and social sciences upon which geography draws so heavily and to which it can contribute so much.

MULTIDEPARTMENTAL CURRICULA

Now to turn to the type of interdepartmental curriculum which is of greatest current interest. This is the curriculum which involves, usually, more than two departments. But the significant feature is not the number of cooperating departments but the fact that the curriculum, tho we call it interdepartmental, aims at a non-departmental goal. It provides training and research in some field of knowledge which does not fit into conventional departmental pigeon holes. Of most current interest are the Foreign Area programs. The position of area studies in 1947 has been well described by Robert B. Hall.¹ Other curricula of this type exist in the fields of international relations and of regional and urban planning. There are also curricula for the study of cultures and civilizations, which resemble area programs. In this paper I will not attempt to survey all the interdepartmental programs given in this country. As Hall says, they look much alike when seen in the catalog alone. Rather I will discuss some problems and possibilities, largely on the basis of which I know about interdepartmental programs in a few universities.

VALUE AND PLACE OF GEOGRAPHY

It is my opinion that it is hard to overestimate the value of participation in well-run interdepartmental programs. Geographers

¹Robert B. Hall: *Area Studies: With Special Reference to their Implications for Research in the Social Sciences*, Social Science Research Council, New York, 1947.

have much to gain, and also much to contribute. The gains and the contributions both stem from the fact that geography in its very nature touches on many other fields. It is this fact that makes the geographical profession one of the most difficult to practice well, altho it is one of the least esoteric. The geographer gains much from participation in interdepartmental programs because he finds himself working closely with men in related fields. A political geographer's understanding of world affairs is certain to be increased and solidified if he takes part in a well run program in international relations. On the other hand, an interdepartmental curriculum gains solidity if it includes the services of an appropriately specialized geographer. An area program without geography falls short of completeness, even if it deals with the home country.

Geographers are not likely to disagree with the suggestion that their subject should form a substantial part of many interdepartmental curricula. The obvious questions are, what kind of geography should be taught, how should geography be articulated with other subjects in the curriculum, and what difficulties stand in the way of doing a first-class job? It is not easy to disentangle these three questions. I shall discuss them by citing some examples of interdepartmental programs in operation.

WARTIME EXPERIENCE

Altho cross-disciplinary area programs had been launched before the war, their number greatly increased during and after it. Many military training programs were organized in this way. I had personal experience with two: A Civil Affairs Training School for the Japanese area and a School of Asiatic Studies for senior staff officers. Both programs were successful and had the enthusiastic support of the teaching staffs. The teaching in both cases was organized on what is called "the block system." The blocks of lectures were disciplinary in the C.A.T.S. program—geography followed by history, government, etc. In the Staff Officers School, the first division of the program was along regional lines—China, Japan, etc. These regional segments were then divided into blocks of lectures based on disciplines. The success of these schools does not necessarily furnish good guide for permanent peacetime programs. Personally, I found that the necessity of giving the geographical background of, say, China in four or five well-organized lectures was a stimulus to careful preparation and selection of ma-

terial. In the ordinary course, I am inclined to meander. But I think that continued participation in such a program would eventually make one feel like a vaudeville actor doing his turn.

After the smoke cleared away and we had time to think, some of us felt that the C.A.T.S. program erred in giving too little time to fundamentals like geography, history, and society. The more "practical" blocks like those dealing with monetary systems or hospital facilities proved not so practical after all. This information could be picked up quickly on the spot or may have been made obsolete by the war's destruction, whereas a basic knowledge of Japan and the Japanese people could not be improvised and was indestructible.² The Staff Officers School had a wider target and was organized along more fundamental lines.

While the geographical blocks in these schools necessarily included a great deal of plain information, we took time, at the expense of informational teaching if necessary, to explain such things as the monsoons, alluvial and diluvial landforms, crop distributions, and population densities. The great danger, in the "block system" is that straight information will be overstressed, tho I have been told of a case in which the opposite was true. Assigned three lectures on the geography of a country, the geographer devoted so much time to theorizing that he got to the country in question only in the last lecture.

AN INTEGRATED SEMINAR

Another interdepartmental curriculum, the Harvard program in Chinese studies, includes an integrated seminar in which geography has played a small part. As first given, in 1946, this seminar required one-half of the first year of study towards the master's

² Harold Zink believes that the C.A.T.S. program for Germany gave too little time to "such fields as German political structure, legal system and courts, religious affairs, education, transportation, communications, trade and industry, and food and agriculture" and that "what was especially needed was areal instruction in these specialized realms rather than general knowledge of the history of the country." (*American Military Government in Germany*, 1947, p. 12.) Quite likely there is a happy medium between excessively detailed "practical" information and orthodox, academic, chronological history. A well-planned program including political science, sociology, and geography could cover the topics Zink recommends—if men of areal competence could be found to teach it. It may be noted, also, that the history of military government in Germany and Japan was fundamentally different. In Germany, military government followed a line of combat into a country in which the Nazi government had disintegrated. In Japan, occupation followed surrender and the existing government remained effective. The need for immediately practical knowledge was therefore not the same.

degree. The other half was devoted to the Chinese language. A similar seminar occupied one-fourth of the second year and language another fourth, so that only one-half of the second year, or one-fourth of the entire program, consisted of ordinary subject-matter courses.³

In the fall term of 1946-47, the Harvard seminar met seventy-three times. There were eight regular instructors, one of whom was a geographer. There were fifteen occasional and visiting lecturers. The list of topics shows an intricate dovetailing of disciplines. The basic framework was chronological but there was no slavish adherence to dates or dynasties. A geographer will protest at once against the small number of meetings—four—devoted to geography. It seems improbable that any real understanding of geographical analysis and interpretation of regions could be instilled, even tho the geographer was a member of the regular staff.

In the present academic year, some significant changes have been made in the Harvard program.⁴ The number of meetings of the first-year seminar has been cut in half and the regular instructional staff consists of only two men. Geography has been reduced to two meetings, tho this may be due to the temporary absence of the specialist in Far East geography. The historical element remains strong, despite the fact that the time freed by reduction in the number of seminar meetings is given to a regular history course. With due respect to the tremendous importance of the past in China, it seems to a political geographer that more time should be allotted to topics which will be increasingly significant in China's future, such as natural resources, agricultural practices and possibilities, transportation needs, military problems of the Chinese state, and "Realpolitik" both internal and external.

It is unwise to pronounce judgment upon a valuable experiment before there has been time to study its results over a period of years. The changes made this year in the Harvard seminar suggest a number of points for thought. Does the use of many instructors have a disintegrating rather than an integrating effect? Does staff enthusiasm for integrated seminars decline once the fun of planning and launching a novel program wears off? Does "integration" mean one thing to an historian, another to a geographer,

³ Official Register of Harvard University: *International and Regional Studies*, 1947-1948, Cambridge, 1947.

⁴ Personal communication, Professor John K. Fairbank.

another to an economist, and another to a sociologist? The Harvard seminar supplies substantive knowledge and integration at the same time. Would it be better to let a student work in several fields, after which he can integrate his knowledge in a seminar devoted to problems?

INDIVIDUAL STUDY

Still another way of employing geography in interdepartmental programs is thru devices which require individual study. Under this head are included directed reading, comprehensive examinations, essays and dissertations, and tutorial or preceptorial work. Few universities can afford extensive tutorial programs. It is insufficient merely to insert some geographical questions in a comprehensive examination or to permit a student to consult a geographer when he writes his dissertation. To teach geography thru directed reading is not easy. Anyone who tries to suggest geographical titles for an integrated reading program is, I think, in for a shock. There are dismayingly few books or articles which really fit the need. Some splendid geographies are simply too big and technical for the average non-geographer to master without constant professional guidance. The student, turned loose in such weighty tomes, is unable to sift basic ideas from factual information. The periodical literature of geography provides some useful summary articles, but most of the papers in periodicals are of too limited scope for an integrated reading program. There are also practical difficulties in using periodical literature. Libraries usually have only a single copy and recent issues have a habit of lingering in the bindery.

ORDINARY COURSES

Block-system courses, integrated seminars, and directed reading have their virtues and their places in interdepartmental instruction. However, it is likely that most interdepartmental curricula will continue to consist largely of ordinary courses. In this case, if geographers with suitable specializations are available, the student may be exposed to geography for at least a full semester. But this does not mean that one is on Easy Street. The geographer in an interdepartmental program must watch his step, even if he has a course which is all his own. I will point out some of the difficulties.

In the first place, the interdepartmental students will not have time to approach their geography course or courses thru the

customary "Principles of Geography" prerequisite. Few of them will know any geology, climatology, or soil science. The geographer who has given a course for his own departmental majors or graduate students must either adapt it to the interdepartmental students or give a new course for them. If the program deals with an area, the course chosen is certain to be the regional geography of the area involved, so that systematic thinking along geographical lines must be a by-product. To learn systematic thinking as a by-product of a regional geography course is difficult for the student, unless the professor makes a conscious effort to tie his regional information to general concepts. This is hard to remember, when one is full of interest in the region *per se*.

In giving a geography course in an interdepartmental curriculum, one must face the fact that many of the students do not want to take straight geography. This is more true of such curricula as international relations than in the area programs. My own experience has included the teaching of an elementary geography course mainly for students in international relations. I soon learned, the hard way, that orthodox "Principles of Geography" was not acceptable. Nor did I have any better luck with a regionalized world geography. The students wanted to see the connection between geography and politics. They really wanted political geography, to run before they could walk. A compromise by which principles of geography were supported by political illustrations satisfied nearly everyone.

Another pitfall in the path of the geographer who joins an interdepartmental program is that of attempting to give a one-man "interdepartmental" course. It is true that a geographer who defines his field too narrowly throws away one of its most valuable features, and his students are the losers. But it is also true that he should not wander far into precincts which demand first-class training in other fields, unless he has such training. A geography course should have a core which is indisputably geographical and should trespass on border fields only for illustrations and correlations. If a geographer wishes to be unpopular with his colleagues, he has only to combine a claim to universal knowledge with a pat environmental explanation for everything. For his whole intellectual life, the geographer sails a narrow strait between the reefs of fact-laden description and of unscientific "guessplanation."

Despite the difficulties, the adventure of being a geographer in

an interdepartmental program is well worth-while. In a group of scholars, the geographer is likely to find that he is the man who can talk the language of most of the others. He can be an intermediary and integrator. The role is a difficult one. It is easier to become a sort of intellectual wastebasket for odds and ends. The need for and the difficulty of integration are summed up in an article by Harold Zink, on the military government training programs:

From field work the geographer acquires a feel for the land, which is un verbalized and derives from field courses, from teaching students to make surveys, learning how to analyze and integrate, not just the soil, the land use and the physiography, but something more that no one else does. His intuition is the concept of space relationships that is inherent in map making.

But this integrative aspect of geography seldom entered into the Army area teaching. Geographers controlled the area program at one university. Physical aspects were more frequently emphasized than human geography. Research and actual map making and specialized techniques of map interpretation, which geographers uniquely possess, in general, were hardly touched.

Admitting limitations imposed by environment on culture, some social scientists are skeptical that human geography is a science. They maintain that geography as a discipline is too generalized and consequently will fall apart when a group of specialists concentrate on an area. They say that unless the geographer has a specialty, historians and political scientists, who can bring well-defined methods to bear on problems arising from ties between man and the land, will preempt his work.*

Here is high praise and stiff criticism in small compass. It suggests that geographers have an opportunity in area and other interdepartmental programs to which they may fail to rise. It suggests that the training of geographers should emphasize purpose, discipline, and method—especially map and field methods—and should include a sound background in related sciences. I do not agree that historians and political scientists have methods more well-defined than those of the geographer. Nor do I think that others can preempt the work of the geographer without loss all around. I do agree that “unless the geographer has a specialty,” which he develops as meticulously as the specialists in other fields do theirs, he will not survive the competition of an interdepartmental program. Or to put the point in positive terms, a geographer of sound training who develops either a regional or a systematic specialty, putting into it his best efforts, is an asset to the interdepartmental program into which he fits.

*Harold Zink: *The Contribution of the Universities to Military Government*, Bulletin of the American Association of University Professors, Vol. 32, No. 4, Winter, 1946, pp. 701-02.

THE POSITION OF REGIONAL GEOGRAPHY IN CURRENT LIBERAL ARTS EDUCATION*

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INTRODUCTION

Wartime research had a profound effect on the traditional branches of education. Scientists were restricted from association with their fellows and were brought into closer contact with manufacturing organizations while social scientists and students of the humanities were brought together and required to align their theories and techniques. The first group experienced a further withdrawal into specialized fields of research while the latter underwent intimate professional integration of the divisions of social science. While the scientists were engaged in developing new weapons, social scientists were occupied in research leading to the application of those arms for victory and winning the peace. The success of the scientists is self-evident; the success of the social scientists is only partly attained. We have won the war but we have not as yet won the peace. If the latter is attained it will be by means of the lessons in integration and coordination learned thru the war-time experience of the social scientists. This required inter-departmental approach to world problems is difficult to attain because of traditional American academic organization. The problem of integrating knowledge has come to the fore in academic circles because of the currently widespread realization that departmental specializations have not produced the coordination of knowledge essential for modern existence. Campuses, within their sphere of activity, are facing the same problem of coordination that typifies current peace deliberations.

THE PROBLEM

The elements of integration and coordination of knowledge have been relegated to a minor role in academic pursuits by long standing customs of academic freedom. The withdrawal from association with colleagues trained in other disciplines which has been the hallmark of undergraduate and graduate education is the underlying academic problem of war-research and peace discussions.

* Read before the Carleton College chapter, Society of Sigma Xi, January 19, 1948.

Failure to comprehend the techniques, methods and purposes of associated educational subjects has been as difficult to overcome as a language barrier. In relation to the complexity of modern life the compartmentalization of liberal arts education has developed to a degree which is of questionable value to the individual and society. Specialization has permeated undergraduate training in proportion to the body of factual knowledge applicable to a given subject and ever increasing emphasis has been placed on the accumulation of factual material concerning a limited field. To borrow a military phrase, liberal arts colleges seem to be devoted to "education in depth."

College faculties aware of the short comings of education in depth are seeking means of broadening the training routine of liberal arts students by changes in the curricula. In the present maze of educational programs it is common to find liberal arts students amassing as much as one-half of their total educational experience within an air-tight compartment of specialized knowledge, departing from the chosen discipline only when forced to do so by graduation requirements or other arbitrary regulations. To the degree in which students succeed in limiting education to a compartment of knowledge, they become technicians instead of educated men capable of making intelligent evaluations of life.

Many attempts have been made to overcome liberal arts specialization. Classification of curricular subjects into "groups," each of which must be sampled; the imposition of arbitrary ceilings above which "credit for graduation" is not recognized; comprehensive and departmental examinations covering allied fields, have been only partly successful. More spectacular experiments involving radical departures from the academic norm have been introduced. Classification of "great ideas," preoccupation with the classics, and return to the Greek scholastica have been tried. Many have passed from the scene and serious doubts as to the validity of current experiments are widespread. All of these programs are the expression of dissatisfaction with the end-product of liberal arts education. The mental training of a Ph.D., desirable in professional circles concerned with the preparation of skilled technicians capable of advancing the frontier of a particular body of knowledge is undesirable and unacceptable as the goal for a liberal arts college dedicated to the preparation of "educated citizens" regardless of the existence of that institution as an independent academic foundation or as a segment of a large university.

CURRENT TRENDS

Current trends in American academic families are concerned with the coordination of knowledge presently at the disposal of the faculty, and war-time research experience is at the bottom of much of the thinking. The Social Sciences, with unprecedented experience in the inter-relationships of their respective disciplines are leading in revival of interest in education in breadth and are rapidly moving towards a place in college programs equal in importance to that now occupied by science. Just as "experience in scientific ways of thinking" was the *raison d'être* for science as a required subject in the past, so concern about the breadth of understanding about man and his world has precipitated current interest in social sciences.

In contrast to the semi-monastic intellectual experience of the war-research of the scientists the wartime experience of the social scientists, involved coordination and cooperation of the individual disciplines. The methods and techniques of all of the social sciences were brought to bear on the problems of man and his existence in the world. The OSS retained one of the largest groups of social scientists ever assembled for the purpose of conducting research and analysis into the totality of human activity. These workers, joined with linguists, journalists, missionaries, artists, social workers and students of the humanities, in outlining and preparing the Joint Army and Navy Intelligence Studies and the Handbooks and Guides for Military Government. The former publications dealt with military subjects like Military (physical) Geography, Coasts and Landing Beaches, Defenses, Naval and Air facilities and in addition prepared equally detailed chapters on Climate and Weather, Port Facilities, Transportation and Communication, Cities and Towns, Resources and Trade, People and Government, Health and Sanitation; subjects which are by no means limited to military operations.

In the beginning, the work was hit or miss. Each research analyst was preoccupied with data related to his particular field of specialization. As a result, unrelated and often-times directly opposed recommendations, based on strict observance of academic departmental discipline, were presented to the Joint Chiefs of Staff. As a consequence no unified course of action could be determined. Trial and error taught representatives of individualistic disciplines that there was no clean-cut economic, political, social, historical or geographical answer to major problems. Appreciation of man's

position as a part of the earth's landscape was learned "the hard way." Not until experience in coordination—a broadening of the horizons of individuals who had been trained via education in depth—had been gained was it possible to make a real contribution to the strategic and military occupation plans required for victory.

The conclusion of the war was accompanied by a rush of faculty members back to their respective campuses. The impact of these individuals upon academic matters—especially curricular affairs—has been significant and is reflected in the integration now being accomplished within the social sciences. Closer cooperation has not taken the form of "survey courses." Instead it has been concerned with increasing the depth of penetration in a single field of knowledge thru the accumulation of usable information about related subjects. Except in the highest levels of graduate work, departmental lines have not been trespassed in so far as course work is concerned. The war-born appreciation of man's relationship to area has characterized the most recent trends. Among other institutions, Harvard, Columbia, University of Michigan, University of Minnesota, Yale, and Williams College have developed regional programs.

Regardless of the emphasis placed on particular branches of the social sciences, which varies from campus to campus depending on local faculty competence, each Regional Study Program has a common generic pattern which differs from ASTP Area Studies and traditional educational organization in depth. Recognition of the interdependence of all social sciences, and the effective comprehension of world affairs by cooperative programs embracing the total mass of available knowledge, is the basis for the post-war area studies. The use of area, which was essential in wartime, is believed to afford a natural common meeting ground for social sciences and to be a realistic means of attacking the problem of departmentalization of knowledge which appears as unity in nature. Coordination of social sciences via area permits the understanding of the interdependence of departmentalized subjects by focussing attention on a part of the world and bringing each component of man's activities in that area into the consideration. The components of regional study were determined to include history, economics, population, government, health and hygiene, and geography.

THE POSITION OF GEOGRAPHY

Each of these approaches to the study of area is related to a departmental entity present on most campuses and at the same time is familiar to most geographers as comprising the cultural part of a regional study. The greatest effect which war-research had on the social sciences, from the geographer's point of view, was the acceptance of the unity of landscape, and the use of regional study as a basic means of training students in the broader aspects of liberal arts education. Its significance in geographical literature is traditional, its importance as a new outlet for geographical service is challenging.

Geography as the description of the earth is the oldest, as the science of the interrelationships of man and his environment one of the youngest of the sciences. Thruout its history, from Strabo, Heroditus and Ptolomy two views have been held regarding its content. One has defined geography as the study of the earth as a member of the universe; the other has stated that geography is concerned with the observation, analysis, and synthesis of various parts of the earth.

In the United States geographers are generally considered by outsiders to be students of the effect of the natural environment on man. Many of the older school of geographers would hold this to be the correct definition of their work. The tradition is not new for literature on environmental influence may be found in the writings of Aristotle, and Montesquieu's *Spirit of Laws* is based on the assumption that climate and soils determine government. Buckel's *History of Civilization* carried these same opinions to their ultimate erroneous conclusions. However, Ritter and Ratzel were primarily responsible for the inclusion of environmentalism in geography. The latter established the anthropo-geographical discipline as the study of the effects of nature on man and classified anthropo-geographic facts as including: 1) effects of nature on man independent of his will, 2) effects on the willed activity of man, 3) effects that result in man's condition.

This school of geography was transferred to the United States by Miss Ellen Semple a student of Ratzel's. She perhaps made the greatest contribution in the realm of environmental response and in *American History and its Geographic Aspects* made important revisions in current historical opinions. Ellsworth Huntington

made popular the dogma that natural selection is based on an environmentalist-racist thesis of the inequality of man. Environmentalism is not to be deprecated for there are obvious instances in which man has gotten on well because of environmental conditions and others in which he has failed because of unsuitable environment. This first branch on the tree of social scientific monism has been followed by others. Sociologists have long accepted the theories of Charles Horton Cooley, economists have often pursued inclusive theories, and certain phases of psychology, bio-chemistry and history have at various times tried to base their respective scholastic beliefs on a single law capable of explaining all phases of the social order.

Such causal relationships are not definitions of branches of science. A scientific observation is concerned with a group of generally accepted facts—not with particular causal relationships. No science can be depicted in terms of causal relationships. It must be portrayed in terms of the materials with which it deals and the materials of geography are traditionally and historically derived from those branches of science which may be traced back to the old Greek schools of philosophy. These two branches may be summarized as holding: 1) All phenomena may be integrated and localized on earth according to a general law; and 2) The earth's surface may be described and classified in various different ways and the direct and peculiar responsibility of geography as a science lies in this field of endeavor—literally the science of regions.

The former definition has long since fallen away. Its modern beginnings can be traced to Varenus' publication of *Geographia Generalis* in 1650. Its last great contribution, Von Humboldt's *Cosmos*, in which he set forth a scientific establishment of natural law, came too late for geography as the earth science had already sacrificed much of its content to other sciences.

The latter position was developed by Strabo who based a geographical philosophy on the direct interplay of those things found within a region which are of concern to man. To him mathematical and physical geography were of importance because only thru them could an accurate and proper areal knowledge be obtained. Most modern geographers, like Strabo, believe that an understanding of landscapes—the media of all earth and living processes—is a sufficient goal for their work. They place major emphasis on area and areal differentiation and in this respect geography differs

from other subjects which treat of man. To these geographers the subject is primarily and almost exclusively concerned with understanding and depicting phenomena of the earth's surface. The geographer analyses and synthesises field observations according to geographical methods and for geographical purposes which have nothing to do with predetermined desiderata. The media regardless of nomenclature—area, region, landscape, surface of the earth—remain the same, the methods are uniform and the purposes remain identical with those of science. The purposes of geographic investigation need no elaboration. Men study geography because they find satisfaction in making certain scientific observations about a body of factual material. The unfamiliarity of non-geographers with geographical content and method requires elaboration of these matters if geographers are to make their fullest contribution to regional study programs.

CONTENT OF REGIONAL GEOGRAPHY

With the publication of Sauer's *Morphology of Landscape* in 1925, geographers began to discard their preoccupation with environmental response and reverted to practices more closely aligned to Strabo's philosophy of geography.¹ Sauer held that the earth was composed of landscapes which were, in essence, parts of the earth's surface which appeared to be units within themselves after being subjected to a sufficient number of different views. Such areas are comprised of natural and cultural subdivisions, each of which can be reclassified into a number of subheadings. The former is traditionally held to be comprised of climate, and weather, landforms, hydroforms, flora and fauna. The latter is more complex and consists of the "forms" introduced into the landscape by man which may be conveniently grouped under the headings of habitation, production, communication, and population. Recognition of the concern of geographers for things other than "forms," i.e. non-physical things like cultural, political, lingual, and religious distributions is authenticated by numerous French geographers best exemplified by Jean Brunhes in *Human Geography*.

Sauer believed in regional geography to the extent of regarding a landscape as a corporeal thing capable of growth and change in which the Agent (Culture) acting on the Medium (Natural Land-

¹ Sauer, Carl O., "Morphology of Landscape," *Univ. Calif. Pub. Geog. Vol. II, No. 2*. Berkeley, Calif., 1925.

scape) thru time resulted in the forms or Cultural Landscape. The resulting cultural landscape reflected the kind of culture present, subject to evolutionary change, and the mode of occupancy—productive, unproductive and destructive occupation. Each complete landscape undergoes change and unless rejuvenated by a different cultural or natural force may perhaps reach a climax stage. Under this unitary view the final goal of all geography is regional geography.² And it is this particular kind of geography which is most valuable in coordinating liberal arts curricula. It can only be accomplished if geographers are willing to limit their intrusions into other social and natural sciences to knowledge which is peculiar to their discipline.

GEOGRAPHICAL METHOD

The preoccupation of geographers with landscapes requires the use of cartography. All geographic progress depends upon the ability to depict patterns found in the land. The construction of maps, regardless of the means by which the data were collected, is the framework of geographic research. The observation, recording, synthesizing and coordinating of patterns related to Sauer's structure of landscape may be considered to be geographic analysis. The ultimate conclusions which form the body of geographic knowledge are derived from the observation, analysis and synthesis of landscapes.

The delimitation of natural or cultural landscapes or components of landscapes can only be undertaken geographically thru the construction or use of maps. Cartography serves as the heart of geographic research and affords means of delineation and recognition of earth patterns which are almost always too extensive in reality for comprehension. The making of maps, however, is not the final goal of geography, but the interpretation and explanation of local or world-wide patterns cannot be undertaken unless these same patterns are known. Maps form the basic body of material which comprises geography and from them the analysis and synthesis of geographic knowledge is derived. To be of value and to be distinguishable as a science, the body of knowledge must be prepared thru scientific measurement, observation, analysis and synthesis. These operations—so far as geography is concerned—are

²Sauer, Carl O. "Cultural Geography," in *Developments in the Social Sciences*. J. B. Lippincott Co. Philadelphia, 1927, p. 190.

based on the interpretation of maps which in themselves depict patterns of areal distribution. So long as geography is self-limited to the interpretation of earth patterns it remains free from the oft-repeated accusation that it "wanders over the academic landscape picking and choosing its material from all subjects." As in other sciences, related disciplines are required for geographic research and the production of original data, but the use of geographical data in a liberal arts institution can be limited to distributional aspects of those things which are found as unity in nature.

THE POSITION OF GEOGRAPHY IN LIBERAL ARTS EDUCATION

The synthesis of landscape lends itself to the current attempts to instill unity in liberal arts education. The concern of geographers with the interrelationships existing in nature transcends traditional departmental organization of curricula. As a result it is peculiarly adapted to coordinate the social sciences and to serve as a bridge between the social sciences and science. This function affords geographers their greatest opportunity for service in liberal arts education, for the essential unity of landscape offers an opportunity for assembling educational facts in a realistic fashion. In war-research strict observance of departmental training served as a barrier to essential planning and operations. Not until forces which are interdependent in nature were brought together in research programs was success in war assured. These lessons from Washington can serve as the means for overcoming curricular compartmentalization. In such programs, geographers have a leading role for from earliest time their chosen profession has been concerned with the problem of area. It is only necessary to agree on the areas to be considered, to modify the pure concept of landscape to the extent of recognizing political, regional or continental landscapes rather than the professional concept of the unity, in order to find agreement with other disciplines, and to limit geographic liberal arts education to "the science of the earth's surface" to overcome misunderstandings.

Acceptance of responsibility for the preparation of future citizens for later life by liberal arts colleges is more than an implication that education in breadth rather than education in depth is the primary function of such institutions. That such education is essential is indicated by the reversal of position on the part of professional graduate schools with reference to recommended pre-

graduate training. Collectively and individually they are now insisting on a broadening of the educational foundation on which their future students are trained. The establishment of regional programs at the undergraduate level has afforded opportunity for the broadening of educational experience in liberal arts curricula thru the integration of science and the social sciences.

These programs have obtained considerable support from the several educational foundations. They consider such training to be desirable for two unrelated reasons: 1) Regional Study Programs afford a focus for interdepartmental programs not present in any other known form of academic organization; and, 2) They afford basic liberal arts training along broad related lines of education, an advisable approach to terminal education or as a prelude to deeper penetration in a particular subject in graduate school training.

CONCLUSION

War-time research had a dual effect on academic and curricular affairs. Scientists were confined more closely to certain branches of their respective fields and social scientists were required to integrate their efforts in order to understand the problems related to different parts of the world. Geography associated with liberal arts programs has an unusual opportunity to serve as a coordinating subject in current attempts to achieve closer integration of academic subjects that have been artificially separated thru curricular organization.

The ability of geography to serve in this capacity and to recreate in academic circles the unity of landscape as it exists in nature is limited only by the abilities of geographers to delimit their field of knowledge and to refrain from overlapping into associated branches of learning. This can be accomplished by a recognition of the advantages and limitations inherent in regional geography as an education experience in breadth rather than depth. Observance of the traditional content and methods of geography as the science of the earth's surface observed, analysed, and synthesized by means of cartographic interpretation allows geography to serve as a coordinator thru regional studies programs.

GEOGRAPHY IN PRE-PROFESSIONAL CURRICULA***ERIC H. FAIGLE**

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The title of this paper "Geography in Pre-Professional Curricula" has the connotation of Geography in such pre-professional training as Journalism, Medicine, Dentistry, Law, Business, and Commerce. Along with these rather rigid and set programs of training there is a wider and more general preparation, which leads to professional training in the fields of science and social science. The first group of pre-professional areas has a number of fixed and required courses in its program. In view of the fact that there appears to be a general trend in the pre-professional areas toward more general education, it seemed necessary to make a sample survey of thirty-seven different colleges and universities in the United States to determine the status of geography. These institutions were selected on the basis of geographic distribution, and for their recognized and established position in American education. An attempt was made to get a cross-section from the small liberal arts college to the large state university with its many facets of education. The questionnaire was so designed as to get a variety of answers and opinions on the place of geography in these institutions. In order to get an administrative viewpoint of the place of geography in the various institutions, a questionnaire was sent out to the president or chancellor in my administrative capacity rather than as professor of geography. It should be mentioned that in a few cases the questionnaire went thru the usual channels, and was eventually answered by the chairman of the geography department. However, this was the exception rather than the rule, and it was felt that our purpose was accomplished. It might also be added that thirty-six out of the thirty-seven schools replied completely and promptly to the questionnaire. Credit here is due to the efficiency and wise counsel of those who were helping me with the questionnaire. Out of the thirty-six replies received, twenty-two institutions had departments of geography; in eight of them it was the traditional combination of geology and geography, and in six institutions courses in geography were given by other departments. Where

* Presented at the annual meeting of the National Council of Geography Teachers, University of Virginia, December, 1947.

there were departments of geography they ranged in number of staff members from twelve to one, the average department having four members. In thirty-five of the thirty-six institutions, courses in geography can be taken in either the freshman, sophomore, junior or senior years. In one college it was considered upper division only. In the areas of pre-professional work it is possible in most of the institutions surveyed to elect geography. As examples of this, in twenty-seven institutions offering pre-professional journalism work, geography could be elected—only one required it. In pre-law twenty-eight institutions permitted geography to be elected. Twenty-six permitted geography to be elected in the pre-medical and pre-dental programs. In other areas of student specialization or concentration it was found that in twenty-nine schools and colleges of business administration and commerce, eight required courses in geography while twenty-one allowed them to be elected. For students specializing in geology, in thirty-one institutions ten of them required geography for their majors and twenty-one allowed it to be elective. In the field of political science thirty-one institutions allowed or recommended geography in the programs of their major students, while none of them required it. Thirty institutions permitted geography courses to be elected in the following fields of specialization: sociology, economics, history, philosophy, psychology, botany, and zoology. Under the general item in the questionnaire of other areas where geography is required or may be elected, five institutions allowed students to elect it in the teacher education program, nineteen colleges allowed students to elect it in any program. Three required it in the foreign affairs program and two made no comment.

Based upon the samplings which were taken of the thirty-six institutions and also upon the current reports of educational programs in colleges and universities, it would seem that geography is condoned but not whole-heartedly accepted in any real way as contributing directly in the preparation of students in the pre-professional courses.

In the field of pre-professional journalism, work in geography may be elected but seldom is it required. It would seem that in a profession such as journalism, which has expanded to cover all phases and areas of the globe, that one of the basic requirements should be not one but several courses in geography. These courses might well cover world and regional geography along with such

important specialized courses as map reading and interpretation. There are undoubtedly other specialized courses which many of you can think of that would be as important in the pre-professional journalism course. The fact remains that geographers must convince the curriculum builders of pre-journalism courses of the importance of geography in the training of journalists. The challenge now faces the geographer to give the journalist the kind of geography that he can use.

To some extent pre-medical and pre-dental education shows a trend toward the inclusion of a more general and broad training before the student enters the professional school of medicine or dentistry. In the not too distant past science alone was stressed for entrance to these fields. Recognition of the necessity for broader training in an ever changing local and world society has helped to stimulate the movement in this direction in pre-professional training. However, it must be pointed out that the actual extent of progress is spotty and depends, very largely, upon the experience in the educational thinking of top administrators of pre-professional and professional schools. It also depends upon the experience of the advisers of academic programs. Too many advisers have lived too long in their convictions of a single royal road of science to success in medical or dental schools. One institution surveyed uses advisers outside the fields of science, even geographers are included.

The pressure of numbers of applicants for entrance to medical and dental schools at the present time is so great that practically every school is requiring at least three or four years of pre-professional training. This makes it possible for pre-medical or dental students to include a wide selection of courses to support the required courses in biology, chemistry and physics. Courses in general, political and regional geography can and should be elected in such programs.

The position of doctors and dentists in the world and local community is assumed. They minister to all members of society. It is fair to assume that they must know the community in our highly complex society to be successful in their service. The experience of doctors during the last war in all parts of the world illustrates the point. Specifically their knowledge of the islands of the Pacific and the distribution of tropical diseases should have been something of an awakening.

Pre-professional training for law allows sufficient time for even

a broader training than either medicine or dentistry. The emphasis given to the social sciences should point the way for geographic training. General, regional, systematic physical and cultural and even technique courses in geography should be valuable to the pre-law student. It is conceivable that a major in geography would prove as valuable in the study of law as majors in other areas of the social sciences. Law is a part of democratic society in a world community, and it takes place and is related to the surface of the earth.

In the profession of business and commerce it should be pointed out that most schools have as their objective a broad general training before specialization. Again it would seem that a knowledge of areas of the world, sources and distribution of goods and commodities would be basic. In both the general and specialized training for business, geography should have an important place.

These are a few examples of how geography either is or can be a part of the pre-professional curriculum. It seems fair to conclude that the answers taken from the questionnaire point out that generally geography may be elected rather freely. The fact remains, however, that it is not widely elected in most pre-professional training. The question would seem to be how is this to be accomplished. The following suggestions are made:

1. A well planned education of geographers as to the place of geography in the pre-professional curriculum.

2. The geographer should go out of his way to advise and counsel with top administrators about the place of geography in pre-professional training.

3. Acquaint geographers with the objectives of people responsible for pre-professional training of students.

4. Encourage more geographers with special aptitudes for administrative work to go into this field. If they are good they will not only make a contribution to administration but also to the promotion of good geographic thinking.

5. Last and above all, the geographer must remember that this is a time of change in educational thinking and in educational curriculum development. The geographer must do a better job with his subject. It is sound and there is a place for it in pre-professional curricula.

GEOGRAPHY FOR THE UNDERGRADUATE MAJOR***CLIFFORD M. ZIERER**

University of California (Los Angeles)

What curricular training is desirable for the student majoring in geography? Examination of recent catalogs and announcements of about forty colleges and universities offering majors in geography indicates a wide variety of answers to this question. In both the selection and number of courses required or recommended there is great diversity from department to department. Obviously the major in some departments is designed primarily to meet the needs of students who expect to make a career of geography, while in others it is planned chiefly for students who are merely seeking a liberal education.

COLLEGE REQUIREMENTS

General college requirements usually prescribe that a student take certain numbers of courses or units in the major department or field of concentration. The college also commonly prescribes that certain amounts of work be done by all students in English, foreign language, mathematics, and certain of the other broad divisions of knowledge. Within these limits laid down by the college and upon these foundations departments normally prescribe or recommend sequences of courses believed to meet the general or specific objectives of their majors.

It is recognized among some departments that the use of a modern foreign language is necessary or at least advantageous for serious undergraduate study in at least some phases of geography. All agree that a broad knowledge of the physical, social and life sciences is extremely helpful to all students who propose to major in geography. A few departments emphasize these points in discussing the preparation for the major in their announcements.

MAJOR DEPARTMENT REQUIREMENTS

Most departments require that their majors take one year of elementary geography which then serves as a prerequisite to Junior and Senior courses. Relatively few departments prescribe geography courses for both the Freshman and Sophomore years, probably in part due to the fact that the possibility of majoring in

* Presented at the annual meeting of the National Council of Geography Teachers, University of Virginia, December, 1947.

geography does not occur to most students until after they have been on campus for several semesters. It would be a great gain to geography if high schools offered the subject on a sound basis and if in consequence a larger number of college Freshmen began work immediately on a geography major. Such students would be able to take geography courses thruout the first two years and at the same time they could take beginning courses in important related departments. Too many geography majors now find that because of their late entry into the field they are deficient in foundation work not only in the major but also in related fields.

The usual first course in geography for the major, as shown by examination of college catalogs, is one dealing with the physical elements and the second course most often consists of economic geography. Several departments, however, offer world regional geography as the first course. In departments operating under the quarter system the normal year of elementary study may include courses in physical elements, economic geography, and North America. In a few departments requiring two years of introductory work, the first year is devoted to the systematic study of physical and cultural elements while the second year includes a course in weather and climate and a course in map reading and interpretation or a course in world regions or economic geography.

Many geography departments require that their majors take a course in general geology or physiography and a few require historical geology. Recommended extra-geography courses for the beginning major commonly include elementary courses in botany, mathematics, forestry, soils, history, economics, political science and anthropology.

College requirements usually make it necessary for students to take from six to eight advanced courses in their major department. In many departments, and especially where the number of courses is limited, it is possible to count several advanced courses from allied departments on the geography major. In departments, which combine work in both geography and geology, a relatively large proportion of the geography major may consist of geology courses. Where the association with economics or anthropology is close, several courses in those departments are applicable on the geography major.

In many departments an extraordinarily wide range of course selection is permitted in order presumably to meet the requirements of individual students. It must be assumed in such instances

that departmental advisers take considerable time to discuss course needs with each student. Most departments require certain courses of all majors in order to insure their familiarity with the broad divisions of the subject as well as to give them training in the use of valuable techniques.

Large departments tend to require of their majors a combination of approximately equal numbers of regional and systematic courses along with one or two technique courses. Some departments require that all majors take the course on Anglo-America but permit full freedom in the choice of further regional courses. It is common for departments to require one or two courses in weather and climate and, when available, courses in landforms or soils. Courses in cartography and field work are commonly required altho not all departments offer such courses. Increasing emphasis on map reading and photo interpretation is clearly indicated in departmental offerings and requirements. A number of departments offer local field courses for their majors in which basic field techniques are taught. Courses in political, historical, urban and agricultural geography are commonly recommended but only occasionally prescribed.

The combinations of courses required of the major vary considerably with the primary interests of the staffs of different departments. In numerous departments particular emphasis in major requirements is directed toward economic geography or toward physical geography. Other departments emphasize cultural geography, or resource inventory and planning, or plant and soils geography, or cartography and map reading, or the educational aspects of geography. These different types of emphasis are perhaps most striking in departments where staffs are somewhat small and where course offerings are by necessity limited. In larger departments with more diverse course offerings it may be possible for majors to secure a broader training and it is less easy to recognize graduates by their characteristic brand of geography.

NEED FOR CLEAR STATEMENT OF MAJOR REQUIREMENTS

Relatively few departments include in their announcements a clear and adequate statement of the requirements for an undergraduate major in geography. It is unusual to find a statement recognizing the fact that the major preparing for public school teaching, for graduate study, or for government service should fol-

low somewhat different lines in the selection of courses. It would be helpful if sample four-year course sequences in geography to meet various objectives could be made available to interested students. Lists of useful courses in other departments should also be made available to majors to guide them in rounding out their programs. Prerequisites for advanced courses often need to be stiffened and more clearly stated if truly advanced work is to be accomplished.

If geography departments are to succeed in making a bachelor's degree and a major mean something specific and worth while, it would appear that geographers will need to determine more accurately what such work should include. It can scarcely be assumed that all of the collections of geography courses which have developed over the years in perhaps a hundred colleges and universities in America provide an adequate basis for a professional major and degree. The uneven character of undergraduate training now given geography majors shows up rather strikingly in the graduate schools which draw students from many parts of the country. Many departments unable to provide all of the courses needed for a professional major might provide a sufficient number of courses about which a cultural major can be built.

The National Council of Geography Teachers might well undertake a thoro study of geography major training in our colleges and universities and discover what kind and amount of training the profession believes to be essential. At the present time it is not possible to assume that even the better students from some of our colleges offering a major in geography are adequately prepared for graduate study or that others are securing the most effective cultural experience. Government and business might also like to know just what a geography graduate is supposed to be capable of doing on the job.

THE PROFESSIONAL MAJOR

An undergraduate professional student in geography should acquire a thoro and systematic knowledge of the physical and cultural elements. He should become familiar with the major relationships existing between and among these elements in representative regions of the world. His understanding of these facts may be strengthened by taking courses in related physical, social and life sciences. A scientific point of view should be acquired in the early stages of college study. Adequate knowledge of history and of

the historical method is desirable. Skill in map reading and aerial photo interpretation should also be part of the accomplishment of the professional student during the first two years of study. Ability to use the English language effectively, and perhaps also the ability to read a selected modern foreign language are to be assumed before the major begins his upper division studies.

During the third and fourth years the professional major should take not less than 24 semester units (or eight courses) and preferably 30 semester units (or 10 courses) in geography. Approximately half the student's effort during these two years should be devoted to geographic study. Courses in field geography and cartography should be required of all professional majors. Ability to observe and interpret geographic facts in the field is an essential skill even at the undergraduate level. Two advanced courses dealing with climates, land forms, soils and (or) natural vegetation should expand upon the introductory work. Two or preferably three courses should deal with regional geography and involve a thorough regional synthesis of major divisions of the world such as Anglo-America, Western Europe and Eastern Asia. Two or preferably three advanced courses should deal with historical, political, economic and (or) population geography.

On the basis of 24 or 30 required semester units of work in geography in the upper division the student still has an additional 30 or 36 units (10 or 12 courses) to take during the Junior and Senior years. (A student is expected to have 120 units of academic course work for graduation.) Most of these 10 or 12 courses would consist ideally of advanced courses in allied fields (geology, history, political science, economics, anthropology, and botany). Two or three of these courses, however, might be taken to advantage (beyond the minimum requirement) in geography from the regional, systematic or technique groups. The exceptional student might choose a course in undergraduate research or a proseminar dealing with library techniques and geographic writing. A course on the nature and applications of geography would be useful in giving the undergraduate some integrated and critical understanding of the subject in which he is majoring as well as some assistance in directing his knowledge and skills toward some specific professional accomplishment. A course in the teaching of geography should be available for those who wish to enter the teaching profession.

If every professional geography major could take a minimum

of 12 semester units of elementary work and 24 semester units of properly selected advanced work or a total of 36 units in his own department, the training of our students would be considerably strengthened. In the larger departments, where a greater variety of courses is offered, 30 upper division units plus 12 elementary units would appear to be a desirable minimum for professional training. The combinations of specific regional and systematic courses to be chosen by individual students will vary somewhat in response to their areas and topics of prime interest. The choice of techniques courses will also vary somewhat according to their professional objectives.

THE CULTURAL MAJOR

The cultural undergraduate major in geography should require fewer specialized courses than the professional major and it might well emphasize the descriptive aspects of the subject. Students taking the cultural major as well as those taking a professional major would appear in the same general introductory courses, in the same regional courses and in the same broad systematic courses. The cultural student would not be required to take cartography but he would take map and photo reading. The cultural student would not be required to take a course in systematic field methods or in library techniques. Neither would undergraduate research and a thesis be part of the cultural major. Courses emphasizing the relationships between geography and other disciplines would be particularly useful in providing a broad cultural background and appreciation. The unit requirement should be no less for the cultural major than in the case of the professional major but some additional freedom might be allowed in the inclusion of extra-geography courses as part of the cultural major or field of concentration.

It is to be expected that many students interested in geography would choose the cultural major rather than the professional major. By permitting somewhat different selections of courses to meet the needs and interests of both groups of majors, geography departments would more effectively serve student needs. Geography departments should contribute not only to the training of students with professional interests but also to the education of those who seek only a broad cultural experience.

PROPOSAL FOR ACTION

As a first step toward a clear definition of what constitutes a desirable training for majors in geography, it might be proposed that each department attempt to state more precisely and more completely in its next Announcement its normal requirements for the geography major. The difference in requirements between a professional major and a cultural major should be clearly stated if both types of majors are to be offered. Such statements would not only greatly assist students in planning their programs but they would also provide more specific evidence of what mature geographers in various departments believe to be desirable for undergraduate training in their profession.

The principal goal in the training of an undergraduate professional major should be a well balanced and thoro understanding of the scope and general subject matter of geography along with the ability to employ some of the basic skills and techniques of the subject. The principal goal in the training of an undergraduate cultural major should be a broad understanding of world geography in relation to events and life at home and abroad.

THE NATIONAL COUNCIL AT WORK

COMMITTEE ON AVIATION GEOGRAPHY

The committee on Aviation Geography has been enlarged and now consists of the following people:

Dr. Richard L. Tuthill, University of Kentucky, Lexington, *Chairman*
 Dr. Adelbert K. Botts, State Teachers College, Trenton, New Jersey
 Dr. Clark R. Crain, University of Denver, Denver, Colorado
 Dr. John W. Morris, Southeastern State College, Durant, Oklahoma
 Mr. Clifford H. MacFadden, University of California, Los Angeles

The first three members of this committee started work last fall. Dr. Botts has been working on a bibliography of aviation materials from sources other than airlines; Dr. Crain has been working on a bibliography of materials on aviation available from commercial airline companies; and Dr. Tuthill is working on a teaching outline on the topic of "Commercial Air Transportation" for Economic Geography at the secondary school level.

COMMITTEE ON COLOR TRANSPARENCIES

Last fall, the Planning Committee of the N.C.G.T. recommended a Color Transparencies Project to the Executive Board and it was approved. The following committee was appointed in February:

Miss Elizabeth Eiselen, Wellesley College, Wellesley 81, Massachusetts, *Chairman*

Miss Carol Mason, University of Tulsa, Tulsa 4, Oklahoma

Mrs. Adelaide Blouch, 1244 French Avenue, Lakeland, Ohio

Miss Marion Wright, Rhode Island College of Education, Providence 8, Rhode Island

Mr. Fred E. Dohrs, Graduate Student, Northwestern University, Evanston, Illinois

In recommending the project to the Executive Board the Planning Committee suggested that the Committee on Color Transparencies do the following things:

"a. Analyze the special advantages and disadvantages of colored transparencies in the teaching of geography.

"b. List the sources from which colored transparencies can be obtained both commercially and otherwise.

"c. Discover what types of slides are available from these companies.

"d. Consider what kind of subjects would be desirable and most helpful in color.

"e. Investigate the kind and care of such equipment, for example, types of cabinets, available.

"f. Make information collected available to members of the N.C.G.T. and others thru publication in the JOURNAL OF GEOGRAPHY or leaflets or bulletins issued as a part of the Council's publication program.

"g. Investigate the possibility of exchange or loan of color transparencies among members of the N.C.G.T."

Many, if not all, of the above suggestions were made by members of the committee before the project was approved.

NOMINATIONS FOR DISTINGUISHED SERVICE AWARD

Every member of the N.C.G.T. has the privilege of nominating a geographer for the Distinguished Service Award. Since the Award is to be made at our annual meeting in November, nominations should reach the chairman, Miss M. Melvina Svec, State Teachers College, Oswego, New York, before June first. The nomination must be accompanied by a full statement of the service rendered geographic education by the nominee.

THOMAS F. BARTON, *President*

EDITORIAL NOTES AND NEWS

Are you interested in free background material dealing with Middle America? If so, write to Middle America Information Bureau, Box 93, Lenox Hill Station, New York 21, New York. Suggestive titles of recently revised booklets include the following: *The Banana*; *Cocoa*; *Tropical Oils*; *Tropical Woods*; and *Middle America: A Digest Almanac of Its Eleven Republics*. The Bureau is conducted by United Fruit Company.

Brazil's Ministry of Agriculture is looking toward an expanded production of maté with the hope of boosting exports to the United States where the supply is generally below the demand. To this end, the Ministry has lifted the restrictions on growing and exporting maté. Most of the maté is grown in southeastern Brazil in the states of Parana and Santa Catarina. This area also has great pine forests suitable for plywood manufacture, which might find a ready market in the United States. Brazil's housing shortage is resulting in increased markets for plywood used in the construction of pre-fabricated houses. Frame houses are, however, unsuited to many areas in Brazil, especially hot, wet areas and those infected with termites. Such areas are particularly interested in an all-aluminum pre-fabricated house recently flown to Rio from Miami, Florida, in thirty hours. This house has four rooms and a bath, weighs one metric ton, and was made in a factory in Birmingham, Alabama. If this model house proves desirable, Brazil hopes to manufacture many similar houses in view of its extensive bauxite deposits and hydroelectric power potentialities.

The Virginia Geographical Society will meet at the State Teachers College, Farmville, on Saturday, April 24. The morning program will be given to the presentation and discussion of papers. In the afternoon, a field trip will be taken to nearby points of geographical and historical interest. The field trip will end at Longwood, the country campus of Farmville. Raus M. Hanson, Madison College, Harrisonburg, Virginia, is President of the Society.

On Saturday, February 21, the Geography Club of Western Pennsylvania held its annual winter dinner meeting. Dr. Dixon of the Economics Department gave an illustrated talk on the Western States. Dr. Dixon is an excellent photographer and his colored slides were beautiful. As many of the club had been on similar western trips, his pictures and comments recalled their own experiences.

The spring meeting of the club will be on Saturday, April 17, in the Social Room of the Foster Memorial building at the University of Pittsburgh. Miss Mabel McGirr will give a demonstration on the use of graphs with an eighth grade class.

GEOGRAPHICAL PUBLICATIONS

Harlan H. Barrows, Edith Putnam Parker, and Clarence Woodrow Sorenson. **Old World Lands**. Silver Burdett Company, New York. 1947. 346 pages. Maps, illustrations, index.

Old World Lands is the third and last of a three book series designed for use in the elementary schools. The present volume has been written for the sixth grade level, and deals with the life of people in the continents of Europe, Africa, Asia and Australia. While the emphasis has been placed on the countries of Europe and their overseas colonial possessions, there is a nice balance in the treatment of the countries of the other continents.

According to the authors, the central theme of the series is "Man in His World,"

however, the selection of the titles for the books, namely: *Big World, The American Continents and Old World Lands*, does not convey this idea. Nevertheless, the treatment of the textual material definitely deals with man and his activities. All of the illustrations are well selected to show man at work.

In the first twenty pages of the book in the section "Through Many Centuries," the authors take into account the relationship of history and geography. This historical approach serves to show the children how geography has shaped the course of history, and at the same time to lay the basis for understanding the fact that they live in a dynamic world—one subject to change as a result of technological improvements. The recognition of this concept is basic in the social studies. Only by understanding the past can the child be led to interpret the present and to forecast the future.

After the historical approach, the various countries, together with their colonial possessions, are treated in a simple, logical, straightforward manner. The vocabulary is well within the ability of the child's level of understanding. Maps are inserted in the text at a place where they will be most useful. Pictures illustrate the activities described in the text. In the treatment of the historical, geographical, social and economic life of the people, the idea of the interdependence of countries and colonies, regions and regions is made clear, and at the same time the need for conservation of our resources is stressed.

One wonders why the authors interjected the material on China, Mongolia, Korea, Siam, Japan, Philippine Islands, between the material on the British Lands, French Lands, the Soviet Union and the rest of the countries of Europe. The more logical organization, it would seem to the reviewer, would be to include the material on the countries of Asia after their section on The Bridge Lands.

The illustrations, maps and other aids form an important contribution to the series as a whole. In the *Old World Lands*, there are 39 maps, including physical, rainfall, transportation, and mineral maps. There are no temperature maps. The text contains 121 photographs, sketches, some in black and white and others in color. The sketches in color add to the attractiveness of the book, and while the details of landscape are missing in the drawings, they serve to give the child a definite "feeling" for the geographic aspects of the landscape, and dramatize the activities of the people.

The child using the *Old World Lands* should gain a feeling for the eastern hemisphere, its historical past, its changing role in the world of to-day, and an understanding of some of the problems of group living. He should be impressed with the necessity for the conservation of our natural resources and, more important yet, he should have developed a sympathetic understanding of the people who live in these old world lands.

INA CULLOM ROBERTSON

State Teachers College, Valley City, North Dakota

Wallace W. Atwood and Ruth E. Pitt. *Our Economic World*. 508 pp. Illustrated. Ginn and Company. Boston. 1948. \$2.80.

In *Our Economic World*, the authors apparently have attempted to give a survey of the economic world. Section I discusses Physical Geography; Section II contains a brief discussion of races, cultural, economic, language, and religious groups with a chapter on the distribution of population; Section III deals with the world's resources; Section IV is on trade; Section V discusses economic services and responsibilities; Section VI enters into the problem of vocational guidance.

The text is well illustrated but has very few maps. It is very factual and also very general. Due to the enormous amount of material covered, there is a lack of concrete, vivid detail to give life and meaning to the bare facts and generalizations.

ZOE A. THRALLS

University of Pittsburgh

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THE EDUCATIONAL FUNCTIONS OF THE GEOGRAPHICAL SOCIETIES OF THE UNITED STATES*

JOHN K. WRIGHT

American Geographical Society, New York City

Our geographical profession might be compared to an army fighting an endless war for the cause of Enlightenment alongside the armies of other disciplines. The common enemy is Ignorance, with its ally, Folly. Facing our sector of the front stand the entrenched legions of Geographical Ignorance and Folly, and they are particularly tough and "hard-boiled" foes of this country. Some spying on them, done last summer thru a Gallup poll, brought to light disturbing bits of intelligence—for example, that a third of the citizens of the United States would appear to have no clear idea of the location of France on the map of Europe and an eighth of the graduates of American universities "haven't caught on to the site of the British Isles." This would confirm, if confirmation were needed, Commissioner Studebaker's observation that "we are more illiterate geographically than any civilized nation I know." Yet, paradoxically enough, our geographical profession is on a par with, and in some respects in advance of, those of other civilized nations in enterprise, standards, and equipment.

Why, then, have we failed to conquer more ground? While we might have done so had our forces been larger, richer, and perhaps more aggressive, the geographical profession of the United States need not reproach itself for having fallen down on its job. The strength of the enemy and the vast areas that he still holds are due to far-reaching social and historical circumstances—among them the past international isolationism of this country—for which geographers and teachers of geography cannot reasonably be held responsible.

* Address prepared for delivery at a joint session of the National Council of Geography Teachers and the American Society for Professional Geographers at Charlottesville, Va., December 27, 1947.

We are today holding a staff conference to estimate the situation with a view to the planning of strategy and tactics. My contribution will be some observations on the functions of the seven leading geographical societies of the country. These fall into three groups: first, there are three that are concerned primarily with the advancement of geographical research: the American Geographical Society, founded in 1852, the Association of American Geographers, founded in 1904, and the Association of Pacific Coast Geographers, founded in 1935; second, there are two that are concerned with the advancement of geography as a profession: Gamma Theta Upsilon, founded in 1928, and the American Society for Professional Geographers, founded in 1943; and third, there are two concerned chiefly with the dissemination of geographical knowledge: the National Geographic Society, founded in 1888, and the National Council of Geography Teachers, founded in 1915. To save breath, I shall occasionally refer to certain of these societies by their initials. Unfortunately, there is insufficient time also to discuss local and regional societies, such as those of Texas, Chicago, and Philadelphia.

Before considering the seven societies individually, let us take a bird's-eye view of the operations of the Geographical Army as a whole. This army is conducting campaigns on two different fronts. One is a campaign against Geographical Ignorance in the minds of responsible and educated people who are endeavoring to solve important problems of various kinds in the fields of science, politics, administration, and the like: that is to say, a campaign for the advancement of geography in its scientific and practical aspects. The other, with which we are more particularly interested here, is the campaign along the Educational Front against Geographical Ignorance in the minds of children, students, and the public at large.

Fortunately for us, the enemy's forces are unorganized and more or less inarticulate. There is no American Anti-Geographical Association to give them leadership or encouragement. Our chief difficulties arise from certain weaknesses that have tended to reduce our own offensive power and have caused us at times to permit allied disciplines to shove us aside and take the initiative along segments of the front where we might well do a better job than they. Examples of this will undoubtedly occur to all in this room, especially those who have read the admirable professional papers of the NCGT.

Teachers form the infantry on the Educational Front, advancing the foremost lines and doing most of the hardest fighting. They are supported by an artillery of popularizers—lecturers, journalists, writers, makers of popular maps, and others—who blast away at the enemy's rear. Now and then a brilliant bomber, like Professor J. Russell Smith, flies over and demolishes a large stronghold of Geographical Ignorance with a single book.

Back of both fronts the geographical societies perform functions of two kinds: one as a part of a much larger Service of Supply which furnishes the munitions of war, and the other as a sort of General Staff. In the munitions of war the principal explosive ingredients are Geographical Information for the demolition of Geographical Ignorance, and, in some cases, Geographical Wisdom, for the destruction of Geographical Folly. The bombs, shells, bullets, and other projectiles actually used on the Educational Front consist partly of words spoken by lecturers on platforms and teachers in classrooms, and partly of textbooks, school maps and globes, and visual aids of all kinds. The explosive used in this matériel is taken for the most part from such containers of Geographical Information and Wisdom as monographs, periodical articles, and the minds of professors and other learned persons. Along with government agencies, university departments, and other scientific institutions, the geographical societies are concerned mainly with supplying the explosive rather than the actual projectiles.

The functions of the General Staff are divided among the geographical societies, which, unlike the general staffs of military forces, have no authority to issue orders—for which we may be duly thankful! They also differ substantially from military staffs in that much of their work is done by front-line soldiers from the ranks of the infantry. The teachers don brass hats when they attend meetings such as this.

The primary staff functions of the geographical societies are over-all policy-making and planning and the performance of various duties connected with the supply of munitions. Subsidiary to these are the secondary functions of intelligence, morale-building, inspectional, and promotional services. The geographical societies secure and circulate intelligence concerning the enemy, the geographical profession itself, and the activities of the allied disciplines. They build morale by facilitating social intercourse within

the profession and by recognizing distinguished service with special awards. In critically appraising, approving, or rejecting specific proposals, projects, and publications, they operate somewhat as do the inspection services of armed forces. Their promotional activities have to do with the protection and advancement of personal and professional interests for the ultimate purpose of rendering the profession as a whole a more efficient fighting body.

The offensive power of any army, whether of soldiers or of teachers, depends partly on its fighting spirit and partly on the up-to-dateness of its equipment and leadership. Indeed, high morale itself springs in some degree from the confidence that ultra-modern equipment and leadership inspire. If the teachers on the Educational Front had to rely on antiquated Geographical Knowledge and on antiquated tactics in delivering this knowledge on the firing lines, their offensives would soon bog down. Thru unremitting original research alone are the subject matter and methods of geographical education kept up-to-date. Nevertheless, self-evident as this may seem, there are those on the battlefield who regard the Association of American Geographers and the American Geographical Society as recondite institutions cultivating interests that have little bearing on the conduct of the war.

The AGS and the AAG are essentially research institutions. Each in its own way is striving to develop new Geographical Knowledge and to dispense this knowledge to geographers and other persons of mature intelligence and some degree of educational background. In the actual forms in which this knowledge is issued by these two societies it is, for the most part, too complex, too highly concentrated, to be suitable for direct delivery against geographical ignorance in the minds of young folks and the public at large. For such use, it has to be reprocessed and put into special missiles. Altho such reprocessing is beyond the scope of either the AGS or the AAG, the knowledge that they purvey, nevertheless, exerts a far-reaching and powerful, if immeasurable, effect. Simplified and deconcentrated by teachers in teacher-training colleges, by writers of textbooks and popular works, and by not a few up-and-coming teachers in the elementary and high schools, much of it finds its way to the firing lines.

The activities of the AGS and the AAG are more or less complementary. The AGS, unlike the AAG, maintains a great stockpile or arsenal of Geographical Knowledge in its library and map col-

lection and also a professional staff engaged in original research and in the editing and publication of the results of original research. The general policies of the AGS are formed by its Council, a self-perpetuating body. The AAG, unlike the AGS, maintains no collections or professional staff, and holds membership meetings at which the results of original research are presented and discussed. Its policies are formed by a Council elected by the members, and its work is carried out by members serving individually or on committees. Theoretically no aspect of geography lies outside the sphere of interest of either society. Actually, the AGS has sought to develop more intensively than has the AAG the exploratory, mathematical, and cartographical aspects of geography and to take more account in its awards and publications of outstanding contributions that non-geographers have made to geographical knowledge. The AAG, on the other hand, has laid greater emphasis than has the AGS upon cultivating the philosophical and methodological concepts of geography. Both societies furnish the Geographical Army with intelligence, inspectional, and morale-building services. The AGS renders intelligence services thru articles and notes on current geographical work in the *Geographical Review* and thru the issuing of various bibliographical aids; the AAG thru its *News Letter* and the opportunities that its meetings afford for the interchange of information and ideas. Inspectional services are rendered by both societies in their acceptance or rejection of material for publication; the AGS supplements this by its reviews and notes in the *Geographical Review*, and the AAG by critical discussions at meetings. The AGS seeks to build morale thru the award of medals and of honorary memberships; the AAG thru the social features of its meetings, thru certain monetary awards, and possibly also—at least in so far as the morale of those chosen is concerned—thru its elections to membership.

For the geographers of the Pacific coast, the Association of Pacific Coast Geographers performs functions similar to those of the AAG. Dr. Freeman, its secretary, states that its purpose is to promote original research in geography by holding an annual program meeting, by the publication of papers in an annual *Yearbook*, by encouraging graduate students to present the results of their studies, and by making those working in geography up and down the Pacific coast acquainted with each other and with the work they are doing.

To turn now to the professional societies. Gamma Theta Upsilon is a fraternity open to undergraduate and graduate students in geography and also to alumni who have creditably completed a major or minor in that field. Its purposes are to further professional interest in geography and to afford opportunities for social contacts. It maintains and administers a loan fund of some \$10,000, which has been accumulated from initiation fees and is used mainly to aid students undertaking graduate work in geography. The society has fifteen chapters in nine states and the District of Columbia and some 2,100 members.

The American Society for Professional Geographers is a lusty newcomer among the geographical societies. Dr. Starkey, its president, writes that its aim is "to advance the status of the geographical profession. The organization has been open to all serious workers in its field and has been set up so as to provide encouragement for the younger workers as well as fellowship for those who have attained greater professional recognition." In other words, promotion and morale building are the principal functions of both the ASPG and Gamma Theta Upsilon. Intelligence and other services are rendered by the ASPG thru the *ASPG News*, *The Professional Geographer*, and a directory listing research and other projects currently conducted by members, with their publications and fields of interest, as well as thru panel presentations and informal discussions. There is an active placement committee and other committees concerned with developing various plans of action. The ASPG does not seek to duplicate or parallel the activities of the AAG in matters pertaining specifically to original research.

The names of the two remaining societies to be considered both begin with the word "National." Altho both seek to promote original research to some degree—the National Geographic Society thru numerous exploring expeditions and the National Council of Geography Teachers in connection with the status and methods of geographical teaching—their main function is the dissemination of geographical knowledge. In certain superficial respects the National Geographic Society is comparable to the AGS and the National Council to the AAG. The National Geographic operates, as does the AGS, thru a professional staff, and the National Council, as does the AAG, thru the voluntary services of its members. In the form of its *Magazine*, its *News Bulletins* for the press, its *Educational*

Bulletins for teachers, and its maps, the National Geographic issues munitions of war in large quantities. If these are lacking in the high concentration of geographical explosive found in the publications of the AGS and AAG, they are perhaps better suited to direct use on the Educational firing lines. The National Council, thru the JOURNAL OF GEOGRAPHY, puts out a supply of munitions specially adapted for the use of teachers. It also performs an important service in the matter of strategic and tactical planning based on intelligence services. The *Professional Papers* of the National Council present thoroly considered plans founded on careful surveys of the enemy's forces as well as of the forces of the allied disciplines.

Let us now consider a few weaknesses in our Geographical Army and possible ways in which it might be strengthened.

We are certainly fighting for an excellent cause. To us the indispensability of geographical education seems so obvious that we often overlook the need of effective propaganda to this effect, designed to convince the public at large, and especially the administrators and financial supporters of educational and scientific institutions. We are not skilled in presenting our case in statements so thoroly thought thru, so clear, and so artistic in form that they carry compelling conviction. We are all too prone to plead in an academic or pedagogical jargon that tends to repel rather than to attract support.

There might well be a greater degree of co-ordination in our staff work. While cordial, friendly relations prevail between the geographical societies—while the AAG, the ASPG, and the National Council may meet together each year—there is nevertheless a tendency for each society to go its own way alone without much regard for what the others are doing, and at times the different societies work at cross purposes. Since no sharp line separates the professional from the research interests of geographers, it is anomalous to have two membership societies, the AAG and ASPG, within such a small profession as ours, representing as it were the observe and the reverse of the same coin. While the AAG, the AGS, and the National Council, on the other hand, perform distinctive services, the teaching of geography would benefit from more joint staff work on their part designed to promote a greater volume in the flow of new knowledge and new ideas from the fountain heads of original research to the Educational Front.

Most of the joint-staff work performed by the societies is done

on time borrowed or stolen from the primary jobs of teaching and research. Hence such staff work is a secondary consideration to those who do it and much of it is done sporadically, by fits and starts. Consecutive, effective working time can only be secured with money, and, with the possible exception of the NGS, all six of the societies are thwarted for want of adequate funds. If it is healthy for an institution to have more ideas than it has the money needed to put them into effect, it is unhealthy for it to be stymied in its essential purposes for want of funds—and the effective co-ordination of effort with allied societies is an essential.

Geography combines qualities of both the natural and the social sciences. While this constitutes one of its most notable values, it is also in many ways a practical disadvantage to the geographical profession. The higher organization of research and education in this country, as everywhere, tends to split along the line of cleavage separating the natural from the social sciences. A discipline that aims to straddle this line is regarded as a bit unorthodox by the financial powers that be, and funds for the support of geographical institutions and undertakings are not as readily secured as might be the case if geography lay wholly on one or the other side of the line. An outcome has been a widening gap within the geographical profession between those who seek to develop human geography and those who seek to develop physical geography, and the defection of many of the latter from the geographical ranks. To conquer Geographical Ignorance and Folly, our munitions must deliver a balanced fire in which the explosive elements of physical and of human geography are effectively combined. If the element of physical geography be unduly reduced, as seems the tendency, the fire loses strength.

How can the geographical profession secure the respect, recognition, and support that it deserves, not as representing either a natural science or a social science, but a science which amalgamates the qualities of the two? Possibly the solution is for the geographical profession no longer to depend so greatly as it has in the past on the powers that be—the Councils that dispense wisdom and the Foundations that dispense money—but to set up “powers that be” of its own. Professor Brooks has suggested a co-ordinating body representing the geographical societies of America and thru them the geographical profession as a whole. Such a body might conceivably function for geography somewhat as does the National Research Council for the natural sciences, the Social Science Re-

search Council for the social sciences, and the American Council of Learned Societies for the humanities. It might secure the endowment of a Geographical Foundation that would lend financial support to the several societies and to worthy geographical projects of all kinds. A strong case could be made for such a Council and such a Foundation, but whether geographically minded Maecenases could be found to put up the necessary funds is another question. Certainly it is something worth striving for.

TRAINING FOR GEOGRAPHY AND BUSINESS*

EUGENE VAN CLEEF

Ohio State University

The geographer in business is a relatively new phenomenon; but the businessman who is successful, partly as a consequence of his use of geographic data, is a phenomenon about as old as business itself. We who are involved in training young people for careers in the field of geography, but who have ambitions to engage in business, must know what the business world expects of a young man or woman just out of school. We may then hope to teach successfully certain essentials of the science of geography along with the fundamentals of business.

When one uses the term "business" he can mean one or more of many different types of activities. These include such fields as merchandising, banking, transportation, insurance and advertising. Obviously training for all of these specialized fields is impossible. Any curriculum combining geography and business must include the basic elements in each to which should be added those courses necessary to provide such specialized knowledge as is desired. It is not appropriate here to present detailed curricula of various possible types; but we do detail certain specific aspects which ought to characterize all of them.

THE CURRICULUM

In the first place, the usual basic courses in the elements of geography should be incorporated followed by certain regional courses. It is not necessary that students take all regional courses. In many institutions that has been a practice not well founded. I would require all students to study Europe, without which little

* Presented at the annual meeting of the National Council of Geography Teachers, University of Virginia, December, 1947.

of the rest of the world's anthropogeography can be comprehended. The remainder of the continents should be required only of those students desiring to specialize in one of them. After a student has had the basic courses and one major regional course, he should be able to work up any other region as the need arises.

Along with the geographic courses, the curriculum should provide basic courses in accounting, statistics, economics, salesmanship, banking, transportation, industrial management, and advertising. These courses will be effective in providing background material. If the student wishes to direct his interest into world trade channels he should take, in addition, such courses as foreign exchange, international commercial policies, the technique of exporting and importing, political science, some history and foreign languages. If he were thinking about real estate, he would choose courses in real estate principles, appraisal, city planning, perhaps corporation finance and one or more courses in business law. And so, for other aspects of business the student would build his training for a special field upon the foundation of geographic and general business principles respectively.

APPLICATION OF GEOGRAPHY TO BUSINESS

We have already suggested that the application of geography to business is by no means new. However, the formal training of young persons as geographers for the purpose of business careers is new. In fact, it is so new that we should recognize it as still in the experimental stage. A few men who have been trained as geographers or who have had a considerable dose of the subject and have offered their services to business, when doing so have been careful to avoid emphasis upon their geographic training, if they have mentioned it at all. One person has suggested that for the present it might be well for geographers to offer themselves as marketers, foreign traders, planners or something else depending upon the job, and only after they have demonstrated their value, casually reveal the significant contribution of their geographic training to their successful performance. This approach to the realm of business will have its supporters and its critics. I mention it only as a point of view expressed by some who have had actual experience.

AVAILABILITY OF JOBS

Now that we have our young people properly prepared we may discover we have placed the proverbial cart before the horse. We

should have asked in the first instance, "Are there jobs in the business world for geographers?" or "Are there *enough* jobs in the business world, demanding geographic training to warrant our giving encouragement to youth to prepare for them?" The answer to the first question is easy enough. There are jobs in business for geographers. The answer to the second question is much more difficult. We don't know how many jobs there are. As geographers, we might argue that there should be many. But such an argument does not ipso facto create them. We shall have to pioneer, giving encouragement to those aspiring to business careers, but so training them that in lieu of their securing a job in business they could still qualify as teachers, specialists in government positions or in other fields in which geography is fully recognized for what it is.

BUSINESS EXPERIENCE

Perhaps we should have indicated that an important part of the training of geographers for business careers calls for actual experience. During the summer vacation periods the student should get a job as a salesman or in some other commercial capacity. We would emphasize selling experience during one or two summers, at least. There is no finer training for the hard knocks of life in general and certainly as preparation for the business world in particular. No formal credit need be given by the school for such work. The personal benefits in themselves constitute adequate credit. And in passing we may note that if this exposure to the business world is made early in the student's career it will help him to decide whether or not he is likely to continue his training with enthusiasm or whether he would commit a grave error to pursue this course farther.

THEORY VS PRACTICE

I cannot refrain from cautioning persons who believe the standard curriculum in Economic Geography is adequate preparation for business. It is one thing to discuss the earth's resources in relation to mankind in general but quite another to know the immediate problems of Mr. A. who establishes himself in business for the purpose of securing certain raw materials to be converted into saleable products, to sell the products and to collect the accounts receivable. It is one thing to talk in the classroom about exchanges among the nations of their various commodities and the list of stimuli to world trade. But it is quite another thing to know how to initiate sales, to pack correctly for overseas shipments, to pro-

vide proper documentation, to adopt the right policy with respect to the terms of sale and to expedite a host of other matters vital to the achievement of international exchanges.

The businessman speaks in dollars and that's the "language" with which the Economic Geographer must be familiar when he presents himself for a job. If he has gained facility in this "language" then with his geographic background, he is in a position to be of unique value in many of the spheres of business already noted. If a geographer were asked by a businessman, "What contribution can you make to my business?", certainly a legitimate question, he should have a convincing answer. Let me answer the question by presenting cases. The sequence of these cases is of no significance.

EMPLOYMENT CASES

In a bank which engaged in international transactions a geographer was assigned the duty of investigating the natural elements, including the people, of those regions in which firms or nations were seeking credits. The geographer not only collected the facts but was called upon to interpret them with reference to the economic potentialities of the region.

An investment house some years ago employed a geographer, not on a full time basis, but in a consulting capacity to perform work somewhat analagous to that requested by the bank just noted.

A retail establishment of substantial size has had a geographer for some years who has been making market surveys and applying many of the theories of response to environment to current problems of merchandising.

Some geographers have been employed by aviation companies to assist in the determination of routes, in the preparation of travel literature for use of passengers, both actual and prospective.

A geographer has been employed by one of the largest processors of a fairly common mineral, to draw maps of their properties, to locate suitable sites for factories and warehouses, and to do some statistical work in association with distribution operations.

Perhaps the most notable instance of a geographer playing an outstanding role in business is that of one who is now president of one of the nation's most influential groups of manufacturers. He was trained in the field of geography and economics. When he was engaged in academic work he was, to my mind, one of our most logical and clear thinking geographers.

Many more cases are available. Time does not permit even listing them. From the illustrations given we can gain some appreciation first of the fact that there are jobs in the business world for geographers and secondly, that they can be quite diverse. Realtors, manufacturers of a considerable variety of commodities, railroads, agricultural organizations and many others either make use of geographers today, or should be making use of them. With proper initiative on our part; appropriate training of carefully selected individuals, a pioneering spirit and an abundance of patience we may well look forward to the day when the science of geography will be looked upon not only as a cultural subject but one possessing as important applied aspects as do chemistry, physics, and the biological sciences.

TRAINING GEOGRAPHERS FOR PLANNING*

HAROLD V. MILLER

Director, East Tennessee Office, Tennessee State Planning Commission

Several years ago Joseph Hudnut, Dean of the Graduate School of Design, Harvard University, questionnaired all departments of his institution, asking for suggestions on the education for young planners. One hundred and twenty courses of general study were recommended as "essential," seventy-five others were suggested as "desirable." These did not include courses offered under the specific heading of *planning*, nor was reference made to any period of apprenticeship. Dean Hudnut has suggested that after these thirty-five or forty years of training, the individual would need a few courses in philosophy to help him organize and evaluate all he has learned.

Fortunately, our field of discussion is not as broad as Dean Hudnut's inquiry. We are considering the enrichment or broadening of the geographer's educational experience to make possible his entering the planning field, and to make him more useful in planning activities. I am happy to undertake such a discussion, in the hope that the profession might profit by sharing viewpoints developed during more than a decade of practice.

It should be clearly understood that the following observations

* Presented at the annual meeting of the National Council of Geography Teachers, University of Virginia, December, 1947.

are from the standpoint of a person trained in geography and practicing in the field of planning, rather than from the standpoint of an educator. The speaker intends to attack no institutions nor will he guarantee that his suggestions are entirely feasible from the educational standpoint. The following observations are made in the light of the speaker's own personal philosophy of planning and geography and the suggestions relate to observable needs under that philosophy.

WHAT DO WE MEAN BY PLANNING?

I consider the essence of planning to be a philosophy, an approach, a way of doing things, a democratic process—rather than that planning consists primarily of a series of physical design problems; or that planning consists of drawing beautiful master plans for which there is not adequate machinery to translate them into improved facilities or conditions for human use.

In my present position as Director of the East Tennessee Office of the Tennessee State Planning Commission, I responsibly deal with every phase of city and regional planning. This office is the primary source of technical information and advice to city, county, and regional planning commissions over an area embracing approximately 1,000,000 population. Our work is not confined to the usual city planning problems of zoning, subdivision control, traffic management, and the other customary elements of a physical master plan, but includes as well, responsibilities in the direction of municipal finance, drafting of legislation, securing citizen participation in planning on a democratic basis, guiding the location of industries and encouraging the proper uses of all resources of the area. It may be that the activities of our office are practically unique in that we touch so many phases of city and regional concern and that in the process we follow thru with the local people themselves in helping them to develop the plan they want for their community. By the same token that our activities are unusually broad, there would be relatively little likelihood that a graduate from a course of study in geography with emphasis on planning would immediately find himself with such broad obligations. It is far more likely that he would fill a more specialized post in a larger organization, perhaps in a metropolitan setting. If he can foresee employment in a particular post with such specialized responsibilities then perhaps the training need not be as broad as that which I will outline.

May I make one further general observation bringing philosophy on planning a little closer to the job of planning. It is my conviction that the most beautiful architectural design or the most finished engineering study of a community or an area means little if the community's economy is not sufficiently strong to bear the cost of construction of the facilities designed. Such design is open to criticism, and is definitely bad planning. A competent geographer finds himself with a background to analyze the community, to recognize the functional relationships between its component parts, and, on this basis to assist in location or attraction of industry, expansion of trade and service, and whatever else may be necessary to firm up the local economy. Good training in economic geography will enable him to visualize the relationships and potentialities of the community or region in relation to its resources and even in relation to the remainder of the nation and the world. Thus, he is in a position to deal competently with the economic base of his community or region and in so doing insures the availability of the wherewithal to translate his best plans into facilities or conditions of value to human beings. (After all, *people* should be the central theme and objective of all planning.)

Planning as I see it is an approach, a way of doing things. That being the case, the details will vary from place to place and circumstance to circumstance. The detailed activities however, can be grouped into two major categories. For want of better words I will call these regulatory and creative. By regulatory measures I refer to measures in which the force of law is brought to bear to guide or control the development of the community or region. Perhaps the most widely applied of the regulatory devices is zoning. Zoning in the last analysis is a local law or ordinance dividing the area of jurisdiction into functional sub-areas which are recognized in the law as districts, and district by district guiding and controlling the uses of land. Another regulatory device is the control of the sub-division of land. In sub-division control a legally constituted body reviews all plats of proposed sub-divisions to insure that in the public interest adequate streets are dedicated, a pattern of lots will be established conducive to sound growth of the community, and to secure such physical improvements as local policy may require.

Under the heading of creative activities come the much larger range of specific undertakings. These will range from street and expressway planning, matters relating to schools, civic centers,

parks and playgrounds, industrial development, water supplies, sewage disposal, slum clearance, street traffic, urban transit, and inter-urban transportation, to matters of local government finance generally and in relation to specific improvements, local government reorganization in some cases, and finally to actual participation in or responsibility for the drafting of appropriate legislation to secure or facilitate the improvements indicated by the planning process.

COMMON GROUND; GEOGRAPHY AND PLANNING

It has sometimes been pointed out that a full-fledged geographer needs to know a great many things about a great many places. The planner is not so concerned about as many far away places as is the well rounded geographer, but the planner needs to know a great many more things about his area of concern. He needs to know not only all the pertinent *facts* about his town or area, but he must be alert to the functions of the physical parts of his area, and the functional interrelationships between its various parts. It is also important that he have the ability and the mental attitude to put to use what he does know in making his area of concern a better, more efficient, more profitable, convenient and healthful place for people to live.

All this brings me to a non-academic point I should like to make about the training of the geographer for planning. The geographer going into planning (or any other applied field, for that matter) must be willing to do the job at hand. I shall never forget the occasion of my giving a paper before a geographic society, only to have its presentation followed by comments from the floor generally commending the subject matter and the presentation, but raising the question, "But is this geography?" I would not deny my critics the right to raise that question under those circumstances, but the geographer going into planning should not be so trained that when he arrives on the job (and on the payroll) he holds himself aloof from assigned duties, challenging the assignment on the basis, "Is this geography?"

SPECIFIC RECOMMENDATIONS ON TRAINING

As indicated in the title, we are talking about geographers in planning, rather than a project for making planners out of geographers and turning the planning profession over to this new race.

Not many persons basically trained in geography will need to know intimately all of the ramifications of the planning field, at least unless or until they have advanced to positions of tremendous responsibility. In such case, they probably would begin to be administrators, depending on a staff of specialists to do the detailed work. However, additional background will better equip any worker either to do some of the specialized work himself, or competently supervise, understand, and appreciate the product and problems of his associates.

Of the customary courses in geography, the student will do well to include, beyond introductory courses, a substantial amount of work in urban geography, economic geography, cartography, and gain as much experience as possible in field techniques and photo interpretation. Regional studies generally will have informational and exercise value, and regional courses on North America or the United States should have definite content value, for, the chances are, the geographer-planner will probably be operating in this portion of the world.

The geography student interested in planning should elect some courses in planning, if his institution offers such courses. In some cases he will find inter-departmental programs or committees already established which can be of great value in selecting those available courses most nearly fitting his wants and needs. Such work will help prepare him to do a job in planning, or at least give him a chance to decide what, in planning, is of particular interest to him.

In his actual operations the geographer in planning will meet situations requiring design ability beyond his capacity. If he is well enough established in his work he can arrange the hiring of necessary technical assistance. Perhaps he could handle some problems of design pretty well if during his course of instruction he had elected a course or two in planning design.

From time to time legal matters will confront the planner. Fortunate is he who has found and elected a course or two in planning law and legislation.

Much of the effectuation of plans must be done thru existing branches of government and it is often the case that local government, particularly cities and towns below the metropolitan size class, do not have adequate machinery for effectuating a planning program. Thus, whether the problem is to use existing machinery

or recommend reorganization of existing government, one finds himself involved in matters of public administration. Good survey courses elected in public administration will be of value—even more so than equivalent time spent on extremely specialized courses in that field.

For persons simply interested in entering the field of planning there are numerous text materials and opportunities for preparation and self betterment. For work with local communities I have found no better text than *Local Planning Administration* published by the International City Managers Association and which can be purchased or can be used as the text for a correspondence course. Incidentally, you would be surprised at the amount of “geography” there is in this book. Then too, several of the schools of planning, M.I.T. for example, give intensive short courses on planning during the summer months.

For those who are interested in employment in a specialized job on a large planning staff, the related courses might well vary somewhat from those suggested earlier. For a person desiring to obtain a position of a research character with a large planning organization, electives in statistics, graphics, and cartography, would be of distinct value. If the job sought involves industrial development then a strong background of economic geography plus courses related to industrial economics and even some engineering would be of definite value. If one is interested in the recreational phases of planning then courses on park and playground and other physical recreation facilities and design might be found in physical education and landscape architecture departments. A background including some sociology would be of value to those interested in specialized work in the social phases of planning.

You will note that thus far I have not mentioned either geology or any of the biological sciences—fields in which many geographers have in the past been encouraged to take electives. I would consider courses in these fields to be of limited value to geographers going into planning except that economic geology would be of distinct value to the geographer interested in specializing in resource development phases of regional planning.

In all of this discussion I am assuming that the graduate training of the candidate for a planning position will have equipped the candidate with ample ability to appraise and secure base map material (or draw them up from field survey), to carry on field map-

ping (particularly land use) rapidly and accurately, and to secure, winnow, and evaluate existing data of all kinds relating to the area of concern.

The geographer interested in planning should practice the art of writing and speaking clearly and convincingly. He should train himself to be able to write popular newspaper stories as well as accurate, complete, water-tight technical reports and proposed laws. He should be able to mingle with people and put across his message whether it be in a neighborhood meeting of relatively unlettered citizens or before a legislative body or a meeting of thousands of scientific or professional people.

Planning is a relatively young profession. Thus far its personnel and leadership has been recruited largely from among persons basically trained in architecture, landscape architecture and civil engineering. As a result, there certainly are instances of planning taking the form of a beautiful piece of physical civic design without sufficient recognition of the site, situation, and economics of the community or region under consideration; without sufficient participation on the part of citizenry in the development of the plan; and without adequate attention to local political and administrative matters, which, in the last analysis, either put the plan into effect or cause it to be put on a shelf to die from neglect. Again, because planning is a young profession tomorrow's role for the planner is not fully clear. To some extent, tomorrow for planning will be what we make it. Under these circumstances, the planning profession can stand a generous leavening of geographers interested in planning who are willing to orient their training toward that end, and finally who are willing to put to practical use their knowledge and ability—not standing aloof and saying, "Is this geography?"

TRAINING GEOGRAPHERS FOR TRANSPORTATION*

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Of all of the trends in the field of geography which have budded (if not blossomed) during the past two decades, one of the most significant has been the expanded utilization of geography in business enterprises. To a few stalwarts, who from the turn of this century established the field of economic geography, go the credit and acclaim for recognizing the potential contribution which geography could make to the business world. Theirs was the spade work, the planting and the careful cultivation; today the first good blooms are now to be seen. There are few who are more conscious of the debt owed these pioneers than those who have worked in business.

But today the scene has shifted somewhat from the earlier picture. No longer is it necessary to defend the field of economic geography as a valid and valuable addition to the knowledge of all executive aspirants. With the rapidly expanding specialization in the structure of American enterprise, the functioning of specialists of all types has increased to a tremendous degree. More and more it becomes apparent that there is a use and a need for more than general geographic information. Truly there is a growing need for the geographic specialist and it is nowhere more apparent than in the field of transportation.

BUSINESS POINT OF VIEW

However, there are certain differences between being a business geographer and being any one of a myriad of other business specialists. It is essential to clearly understand these differences before venturing into the business world. What is more these differences must be visualized from the point of view of business and not from that of education. It is not necessary to analyze these points; they are plain business facts and they must be accepted. Simply stated they are:

1. Business wants practicality, not theory. By this is meant—what *are* the facts; not what they might be or could be or should be, but what *are* they.

* Presented at the annual meeting of the National Council of Geography Teachers, University of Virginia, December, 1947.

2. Business wants applied information, not pure information. In other words, geographic information must be applicable to specific problems in a particular business rather than encyclopedic, generalized information.
3. Business wants multiplicity of usage, not singleness of purpose. Breadth of application is often more important in a given enterprise than the solution to single small phases of smaller business problems.
4. Lastly, business wants to be shown concrete, dollars and cents returns, not intangible possibilities which may or may not eventually pay off. This does *not* mean that business is concerned only with the short-time view, but it *does* mean that all business planning is projected toward real, calculable returns.

APPLIED GEOGRAPHY

How are these business dictums to be interpreted by the field of geography? The answer seems quite obvious. There is and will continue to be very little use for pure geography in the business field. Any who have tried to enter business by saying, "I am a geographer," know that the phrase is no open sesame. It connotes little or nothing to the business man, and in consequence the one thing of which he is sure is that he does not need one. Geography to be useful to business must be *applied geography*. Only the person who can take his academic fund of geographic information and understanding, and apply it to a specific business in such a way as to clearly indicate its values, can hope to convince an employer of his utility and make his subject matter field pay off on the monetary line. It should be apparent, then, that one must be a geographer *plus* to make good in business.

In reality this is not too different a situation from what actually is the case for many high level business personnel. But numerically other occupations have the edge over geographers. A given company needs a number of accountants, insurance men, tax experts, traffic agents, and others; it will probably need only one geographer—a geographer *plus*. Such adaptability as is here suggested is far from easy, but it can be done. And the great single problem is to end the domination of the purist point of view, to cut, chisel and jam geography into every business facet to which it can be applied. Whether it loses its identity in the process is of much less consequence than the fact that it is there. Sooner or later its true iden-

tity will become apparent; that future can take care of itself. It is to get in and to give which is the number one problem today.

It is to be hoped that this introduction is not without value, for it establishes the viewpoint to be applied to the field of transportation. If the following application is shortsighted in terms of the entire field, it is because the writer's experience lies in but one form of transportation. It is hoped, however, that the analysis is sufficiently general to apply to all major forms of transport.

THE GEOGRAPHER AND TRANSPORTATION

Being a geographer and looking at the transportation business to determine those aspects in which geography can make its most pertinent contributions, I come up with three substantial possibilities: the research department, the traffic department and the advertising department. In a small company the geographer might be expected to function in all three; in the larger companies one's functions might be more restricted, but not necessarily so. In limiting the performance of the geographer to these three departments, other possibilities such as in-service training, educational services, technical consultation and special assignments are being side-tracked but certainly not ignored. In many cases these possibilities might be classified under research.

Research. Research is the most generalized of the three probabilities to be discussed, and perhaps it is the least stable. It is said of business research that when times are good the company does not need it and when times are bad they cannot afford it. More accurately, however, the business research geographer may be diverted into numerous non-geographic channels and only his astute adaptability will show him the ways in which his geographic training may best be utilized to meet immediate needs. The odds are many to one that he will be a lone-hand among a group of economists. He must work with them and on them to contribute his point of view. Often the geographer's best contribution can be made at the project planning stage or in the interpretation and graphic presentation of results. He will be expected to know the best sources of geographic information and to apply them to the problem at hand. Place, quantity, quality and exceptions within the geographic realm are constantly expected of the transportation-geographer, but the natural emphasis is upon the analysis of place. Transportation is concerned with the *movement of persons and things from place to*

place. Not only is this true in the restricted local sense but in the broader sense as well—regions, nations and even continents. The more that is known about place in all of its natural and cultural environmental aspects, the more adequate and surer is the transportation research. For example, the shortest practical air route from New York to South Africa is not via Miami and Natal but via the Azores, Dakar and Leopoldville. The best African air terminal is Johannesburg, not Cape Town. There are not enough missionaries and big-game hunters to support such a long air route even on a bi-weekly flight schedule. The most valuable Persian lamb skins in quantity are produced in the Southwest African Mandate, and they are lighter weight by almost half than the Russian or Afghan skins. These seemingly unrelated facts will occur to the geographically trained mind and, altho they may not seem very significant, they can be woven into a fabric which will pay off in dollars and cents.

The problems presented to a research group are diverse, but they are also multi-faceted. It is the rare and restricted transportation problem to which the geographer cannot contribute.

Traffic. The work of a traffic department is more than a routine of routes, rates, and claims, concerning which a series of manuals and tables have been constructed to give the proper answers. Transportation thrives or fails in terms of traffic. It is the traffic which pays off. The whole lengthy gamut of the world's commodities comes under the scrutiny of the transportation lines. Every commodity and every trade channel must be subjected to careful analysis to determine its potential value. New items are constantly sought, new routes developed, new sources of potential traffic investigated. Once again the geographer can play a significantly valuable role. The Persian lamb skins previously mentioned are a case in point. So, too, was the elimination of gold and diamonds as potential South African export cargo. This negative aspect is often of great financial importance. Business has not given up the old axiom of "a penny saved is a penny earned." To carry on the South African example: a geographer would know and could prove that little basis for trade could exist between two geographically similar major raw material producing areas such as South America and South Africa. To plan on moving trade commodities which do not exist is disastrous. Therefore, a route from the United States to South Africa via South America could expect little material help

from pick-ups in Brazil or Argentina destined for Johannesburg or in reverse on the return trip.

Of equal importance to the development of a new route is the astute analysis of "traffic generating areas." Such a trade concept is basically a geographical concept and its many ramifications remain as yet undeveloped. Traffic surely offers a broad front for the transportation geographer.

Advertising. Lastly, the advertising department offers substantial possibilities to the trained geographer. Here the scope of geography is perhaps somewhat less well defined. Clearly, however, there is the area of cartographic representation, which recently has found a multiplicity of uses in advertising, especially to the transportation business. Maps and graphic representations of geographic data have been found to have tremendous advertising appeal. Here is a source of visual information more readily comprehensible than the written word. Geographic training plus creative ingenuity pays high dividends in this field. So, too, does the checking and careful editing of cartographic misrepresentation.

There are additional facets of advertising which also utilize geographic data and principles. Particularly is this true of those transportation facilities which cater to passenger travel. Advertising has expanded to cover sizeable items in the business budget. There is now to be considered "institutional" advertising as well as "direct" advertising. The latter refers to newspaper, magazine, radio, poster and brochure ads. The former is indirect in that it concerns educational programs, pamphlets, maps, films, lectures and even books, which play up the broad values of travel rather than the specific trip. They urge travel sometime in the future for education, recreation or leisure rather than for the vital business engagement of tomorrow. Obviously the whole field of travel intrigues and involves the geographer. Who can better suggest what to look for, when to look and how to appreciate the natural and cultural environment of any place, than the person who has been trained in just that field of knowledge?

TRAINING FOR TRANSPORTATION

The training of geographers for transportation is implicit in the foregoing description. Without attempting to lay down a curriculum to be followed, the essence may be distilled off and a program of action suggested. The writer has no crystal ball to foresee

all the contingencies that a transportation geographer might meet, but the following is suggested as guidance for the would-be transportation geographer or his advisor.

1. At this stage of geographic penetration into the business world, no person should be encouraged to major in geography as an entrée into business, who can be easily dissuaded or discouraged from doing so. Only the person who is thoroly convinced that geography *must* be his life's work has a chance to make good. Opportunities are too few and the sledding too rough for any but the most enthusiastic.
2. A person must clearly have great adaptability. Pure geography has little specific use; academic information must be converted to practical applicability to business problems. To love geography may well mean a future in geographic education—not business.
3. It is scarcely possible to get too much geography. There is no college or university which gives too many geography courses. Yet the field of geographic information is so broad that graduate work in the subject is clearly essential. Consequently, the greater the wealth of geographic information, the greater the potential applicability in the field of transportation. If any emphasis must be suggested, then unhesitatingly it is suggested that economic and regional geography have more to give to the transportation business than does physical geography. But just as certainly field study, cartography, map interpretation, political and social geography are not to be omitted. In fact, it is here suggested that these studies might well be directed toward the solution of business problems. It would be eminently worthwhile if seminars assumed in some cases concrete objectives as an end to the methodological means being taught. Once again let it be stated that it is not possible to have too much geography.
4. Training in geography alone is not enough. This is possibly a bitter pill to take, but it is nonetheless a fact. As has been already pointed out, the transportation geographer will probably be a lone-hand. Therefore, he will work with business specialists of several types—the economists, the traffic manager, the advertising man, the engineer and many others. Being a specialist himself he need not be a business jack of all trades nor a junior genius, but he must be able to make

geography dovetail with the other business aspects. Therefore, in the field of transportation a general knowledge of the following non-geographic subjects would seem prerequisite to business success.

- a. Statistics—It is not necessary to be a mathematical statistician, but a solid familiarity with statistical sources, methodology and use is essential. This is a clear-cut must.
- b. Marketing—Never in transportation is it forgotten that the movement of goods facilitates but does not produce. Transportation is dependent upon markets.
- c. Transportation—A course in the principles and fundamentals of general transportation is essential. Specialized courses would of course also have particular pertinence.
- d. Business Finance—This is the basic language of business. It is an omnipresent element; it is an entering wedge; it is a key to innumerable contacts and opportunities.

In retrospect this program may seem idealistic. It is not. It is practical, it is possible, it is functional. It is the sort of program to be devised when geography educators settle down to the task of training geographers for transportation. Given the right human material to work with, students can be trained to become geographers who will make a positive contribution to transportation which will pay off in dollars and cents.

FOREIGN TRAINED GEOGRAPHERS: THEIR PREPARATION AND JOB OPPORTUNITIES*

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In the United States, most geographers are familiar with various professional fields which offer members of the geography profession opportunities for positions. Most of us are also acquainted with general aims of American college and university geography departments in preparing students for masters and doctors degrees. Many of us are not familiar with training aims of geography departments in other countries nor with the jobs available in those lands for people holding advanced degrees in geography. Recently I have received several answers to inquiries on the question "What are foreign countries doing in geographic instruction to train geographers for professions other than teaching?" Pertinent material on the topic received in this correspondence is included in the following paragraphs. Information is based on letters from geographers in Austria, Czechoslovakia, England, Finland, Sweden, Switzerland, The Netherlands, Yugoslavia and from a well known American authority on the U.S.S.R.¹ My research is by no means comprehensive. It is merely a beginning on the problem.

It appears safe to use H. Ogilvie Buchanan's description of general aims of geography teaching at London University to characterize the teaching approach of several European colleges and universities.

We give no particular bias to the geography student with a view of fitting him more immediately into a particular niche at the end of his training. So far as I know, no school in the country is thinking along these lines. Our aim is rather to give as thoro all-round training in geography as we can, in the belief that the value of such training will prove itself in various fields of employment in addition to teaching.

Exceptions to the use of such generalization are evident, how-

* Presented at the annual meeting of the National Council of Geography Teachers, University of Virginia, December, 1947.

¹ Austria, Dr. Johann Solch, University of Vienna; Czechoslovakia, Dr. Julie Moscheles, Charles University, Prague; England, R. Ogilvie Buchanan, London University and E. W. Gilbert, Oxford University; Finland, Professor J. G. Granö, University of Helsinki; Sweden, G. Walldén, University of Stockholm; Switzerland, Dr. Hans Boesch, University of Zurich; The Netherlands, Dr. J. P. Bakker, University of Amsterdam and A. Säs, The Netherlands East Indies; Yugoslavia, Professor Petar S. Jovanović, University of Belgrade; and Dr. George B. Cressey, University of Syracuse.

ever. For example, E. W. Gilbert of Oxford University writes, "The Colonial Office requires considerable geography for Colonial Administration Service employees and Mr. Steel has been made Lecturer in Colonial Geography to better meet these requirements." Mr. Walldén of Geografiska Institutet, Stockholm also writes that "those who go into government work take a specialized course in the Economy of Sweden—otherwise training for all geography students is the same."

Dr. Bækker forwarded an outline of courses offered in each of three fields of geography at Amsterdam University where he is head of the department. These include (1) Physical Geography with an emphasis on meteorology and climate; (2) Physical Geography stressing geomorphology and soil science; and (3) Human Geography emphasizing what he calls socio-geography. The job opportunities for students majoring in (1) include work as a meteorologist, micro-climatologist or geo-physicist; those studying group (2) may find employment at the Institute of Soil Science, Department of Agriculture, Topographical Survey or at the Geological Survey; geographers majoring in socio-geography are likely to find employment in one of the following agencies: National Planning Bureau, Provincial Planning Bureau, Department of Social Affairs, Department of Economic Affairs, Department of Education. Graduates in socio-geography have been chosen for help in the education of German youth, for burgomasters and aldermen of social affairs in the British Zone of Occupation in Germany. Two students in this field whom the writer met in Amsterdam during 1945 are already in the Netherlands East Indies. In a recent correspondence Mr. Säs, one of these geography majors writes that "my contract calls for three years service in the Dutch East Indies. The newly established Department of Social Affairs needs graduates in socio-geography very badly. There will be a lot of field work to do and a lot of pioneering."

A member of the geography department in the University of Prague says that graduate research in geography places the student in touch with a number of offices that are likely to be interested in his type of work. These include the Army Survey, Town and Country Planning, Hydrological and Meteorological Services and Public Works. The last named agency stresses planning new lines of communication, trade and marketing research, adult education, journalism, regional museums, economic planning, statistical work and tourist propaganda.

So far it has been impossible to obtain statistics on the percentage of students from geography departments in all European colleges and universities who enter fields other than teaching. On the basis of present information it seems safe to say that well over half go into the teaching profession. Mr. G. Walldén of Geografiska Institutet, Stockholm writes that "70 per cent of the geography students in that school go into teaching as a profession"; and Dr. Hans Boesch, head of the geography department of Zurich University says that "probably 50 to 70 per cent of all graduates in geography go into teaching."

The trend may be away from this high proportion in countries which took an active part in World War II. R. Ogilvie Buchanan of London University states, "the influence of the war, which affected most of our geographers very intimately has been to widen appreciably the recognition that the geographer has a contribution to make in many spheres other than teaching. Instances that occur to me at the moment are appointments to the Civil Service of geographers in technical and in administrative capacities. Among those ministries and departments who now recruit geographers for technical purposes are the Ministry of Town and Country Planning, the Ministry of Agriculture, the War Office (Directorate of Military Survey) and the Admiralty (Hydrographic Department)."

In connection with the field of land planning, E. W. Gilbert of Oxford University says that "Mr. L. Silkin, Minister of Town and Country Planning, on January 30, 1947 introduced his new Town and Country Planning Bill in the House of Commons. In his opening speech he said his new bill would 'need the co-operative effort of economists, geographers, sociologists and other professions to be sure that all the facts about the area are known including the characteristics and wishes of the people.' That shows the British Government takes more notice of geographers than it used to."

I might add a personal comment on the need for thorough geographic training in approaching any problem of town planning. While in England two years ago I visited the home of a research worker in the field of land planning. This student had prepared a rather comprehensive group of maps, graphs and pictures. However, he included only one graph on weather and climate and this graph based on data of only one year. Obviously for a comprehensive survey he needed several graphs based on statistics for at least twenty or thirty years to obtain a good picture of the climate

of the city being studied. He had no thoro grounding in geography; had he been so prepared he would have understood better the need for long term statistics in the preparation of climatic maps and graphs. I need not tell you that most people interested in town planning of Britain do have a thoro grounding in geography or are careful to seek the advice of people who possess that background.

According to Dr. George Cressey of Syracuse University, planning affords a field for numerous Soviet geographers. He states in his letter

The objective of Soviet Geography is to increase the productive capacity of the State. This means that strong emphasis has been placed upon practical matters of economic development, notably in the field of planning. It is reported that all planning boards, from those of the Union as a whole down thru the planning boards of the sixteen republics to those of minor divisions, have numerous geographers on their staffs. Unfortunately no specific information is available as to how they operate, but they are presumably concerned with charting resources, development, and distribution as they relate to political guidance of economic life.

No list is available of Departments of Geography or of Soviet geographers, but it is understood that there are dozens of Departments spread widely across the country.

A statement by Dr. Hans Boesch brings to mind the fact that the neutral countries of Europe and other continents lack the war stimulus to the widening horizons in geographic study. Dr. Boesch says "you should never forget that Swiss geography is lacking the great stimulus geography received in Great Britain, the United States and Germany during the war. We still have to work step by step . . . but I am very confident."

To summarize European letters in answer to the question "What are foreign countries doing in geographic instruction to train geographers for professions other than teaching?" one may say that most schools aim for a thoro all round training for geography majors. As a result of this training and of educational needs in different countries, probably over half the geography graduate students enter the teaching field. The war has widened interest of European governments in geography and as a result many more professional opportunities are available. Town and country planning boards, The Ministry of Agriculture, The War Office, the Admiralty, The Department of Social Affairs, The Department of Public Works make up a list of important foreign government agencies which are increasing their staffs of well trained geographers. Similar agencies in neutral countries are also offering in-

creasing opportunities for geographers, but progress is slower than in lands where World War II provided a definite stimulus to increased employment.

The preceding paragraphs have been devoted entirely to a study of European countries. At the same time that inquiries were being forwarded to Europe the writer sent a similar number of questionnaires to geography departments in Latin America. Altho several replies have been received, namely from Chile, Peru, Mexico, Colombia and from leading authorities on Latin American geography in the United States—it seems best to wait for further replies before presenting the information.

FOREIGN TRAINED GEOGRAPHERS: THEIR PREPARATION AND JOB OPPORTUNITIES (LATIN AMERICA)

EARL B. SHAW

State Teachers College
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From personal observation and from reading replies to a question, "What are foreign countries doing in geographic instruction to train geographers for professions other than teaching?", sent to geographers in Latin America and to authorities in that field in the United States, one comes to the conclusion that Brazil is probably doing more than any other Latin American country in training geography students for employment in tasks outside the teaching field. The Brazilian Conselho Nacional de Geografia in Rio de Janeiro is a government agency actually working on problems of all sorts—establishing boundaries of municipios, writing regional analyses of resources and opportunities and making colonization studies. I am indebted to Dr. Christovam Leite de Castro, Secretario-Geral of the Conselho, for a summary of the work of geographers associated with the Conselho.

The Conselho Nacional de Geografia, as a rule, selects its geographers from graduates of the Faculdade de Filosofia, found in Brazilian universities. Under the guidance of the Faculdade de Filosofia there are departments of geography and history offering courses covering a three year period. During the first year, geography students have classes in Physical Geography, Human Geog-

raphy and Anthropology; second year schedules include both Physical and Human Geography with Ethnography taking the place of Anthropology. Geographic emphasis in the third year features courses in the geography of Brazil and the ethnology of Brazil. In the fourth year major stress is placed on educational methodology with optional courses in geography. After the third year a student may receive the degree of Bachelor, but for teaching in the secondary schools the Licenciado degree, necessitating four years work, is required.

The Conselho offers professional opportunities for geographers in four major classifications: (1) *Praticante de geógrafo*; (2) *Geógrafo-auxiliar*; (3) *Geógrafo*; and (4) *Geógrafo especializado*. The particular opportunity available for each individual making application will depend upon his interests and background as well as upon the needs of the Conselho.

Besides work in the different Conselho departments, opportunities for service are offered to public officials and to interested persons especially qualified in the following fields: (1) Geographic excursions and field work; (2) *Tertúlias*—panels on especially selected subjects; (3) *Seminários*—round table discussions.

It is for field work in colonization problems that the Conselho has engaged Professor Leo Waibel formerly associated with the geography department at a leading American university. The Conselho has asked him to make a systematic study of the pioneer zones of the country. In describing his work, Dr. Waibel writes:

In Brazil the problem of colonization has been studied so far only by politicians, sociologists and engineers. Professor Monbeig in Sao Paulo excepted, Brazilian geographers have shown little interest in this the fundamental problem of all Brazil.

The country has become aware of its enormous uninhabited areas and has decided to do something about the situation. One thing is clear to me: if the methods and techniques which we have developed in the last decades are of any practical use at all, they must be applied here in Brazil. It is of course a big job, and I need assistance. It is the plan to send with me on each trip two or three young Brazilian geographers who are supposed to assist me in my work and whom I shall teach my methods and techniques of field work.

It was quite a surprise to the Brazilian geographers, and to some even a shock, when I decided to begin my field work right in the heart of the country, in the State of Goias. They could not understand why I did not like Rio de Janeiro but hurried to go into the wild *sertao*. The answer is very simple. Being interested in colonization I had to go to the interior. Being furthermore interested in the original vegetation and its transformation by human activities, I decided to go to an area where human influence would be at a minimum. I believe that my observations on vegetation prove that it was a good idea to begin my field work so-to-speak from the rear.

During July and August 1946, I travelled by railway, car, horse, and airplane in southern Goias and made a short trip into the west of Mato Grosso. After seven

years of desk work and teaching, I enjoyed this trip immensely, despite ticks, flies, and mosquitoes. Even worse was the food situation. The Goianos eat the kind of food which was consumed in Europe in medieval times, starch, meat, spices; no bread, no vegetables, and no fruits. Papayas and mangoes, both very delicious fruits, are rarely eaten by people but are given to swine. No wonder people are undernourished and suffer from all kinds of diseases. Never in my life have I seen so poor people as in Goias, blacks and whites.

In the State of Goias I found two different types of pioneer areas. (1) In the Colonia Agricola Nacional, which is run by the Federal Government, the best land is given free to poor people only; this means mainly Negroes and other colored people. The idea is to create a system of homestead farms. (2) In the lands which are owned by the State of Goias, a private and spontaneous colonization takes place. Here middle-sized farms are established to raise crops and stock. In both areas forests are destroyed and wasted without any consideration for the future.

In the State of Mato Grosso, I visited the Fundacao Brasil Central, a kind of chartered company, which tries to open up the Central Country in a north-south direction. Here all modern devices, especially airplane and radio are used to serve colonization. In Goias, the whole colonization depends upon trucks, cars, gasoline—all imported from the United States. The frontier is completely Americanized!¹

The Conselho has organized a *Registro* for teachers of geography thruout the country. Names, addresses, professional interests and works are all listed upon index cards. The advantage of the *Registro* is two-fold: (1) it permits the Conselho to keep in contact with all Brazilian geography teachers and to help them in their tasks; (2) it provides a list of those interested in the publications, reviews, pamphlets and maps prepared by the Conselho and offers the Conselho opportunity to enlarge the readers' geographic interest and knowledge.

The Cultural Section of the Conselho is a department especially stressing the expansion of geographical knowledge. It maintains: (1) A *Geographical Museum of Brazilian Environment*, with objects classed according to regions and available for showing to pupils of secondary schools; (2) A *Library* of most frequently consulted geographic works is available to members of the Cultural Section; (3) *The Registro* of Brazilian geography teachers; (4) An *Educational Section* where books are reviewed, courses planned, and papers prepared for the "Boletim Geográfico"; (5) A section of *Cultural Exchange*.

ARGENTINA

Concha Romero James, Chief, Division of Intellectual Cooperation, Washington, D.C., writes that in Argentina, the Universidad

¹ Excerpt of a letter to Dr. Wellington Jones of the University of Chicago, published in a newsletter of the Association of American Geographers, 1947.

Nacional de La Plata and the Universidad Nacional del Cuyo at La Plata and Mendoza respectively, both offer a doctorate with a major in history and geography. According to Andre Simon-pietri, Secretario, Instituto PanAmericano de Geografia Historia, "There are a number of well-known geographers in Argentina concerned with governmental work, e.g. in the ministry of aeronautics, for example on climatological matters; in the National Committee on Geography at work on the preparation of the Geographical Year Book. This gives a complete statistical survey of the physical, economical and even biological aspects of national life. The majority of these geographers are locally trained, altho some of them have studied abroad."

CHILE

Professor Humberto Fuenzalida, Head of the Department of Geography, University of Chile, whom I met at Instituto Pedagógico de Caracas in 1939, wrote in some detail about courses of study offered at the University of Chile. By completion of forty-six hours of specified geography courses the degree of Profesor de Estado is attained. Another course of study involving forty-six semester hours is taken by students wishing the degree of Geógrafo. From Dr. Fuenzalida's description of work for the two degrees I would judge the first is taken by those planning on teaching geography as a career and the second by those who seek geographic field work in government employ. Commencing in 1947, the University of Chile now offers a doctorate in geography.

In describing the work of the Instituto Geografico Militar, Dr. Fuenzalida says that the organization's main function is that of mapping Chile. Within the organization are sections devoted to "Geodesia, Topografía, Cartografía, Aerofotogrametria, Dpto. Comercial y Catastro Nacional (national census)." The officers who teach and administer the Instituto Geografico Militar are themselves trained in the Academia de Topografia y Geodesia and Academia Politécnica.

No statistics are available for the ABC countries of South America relative to emphasis in preparation for geography teaching and for other professional work in geography, but it is fairly obvious that some stress is given to both fields. It also seems clear that geographers obtain jobs other than teaching in the three countries.

COLOMBIA

Professor Ernesto Guhl from Escuela Normal Superior de Colombia in Bogotá is rather pessimistic about the outlook for geography in Colombia. He says that no college or university has a department of geography and that more interest is shown in the field in the "Seccion de la Especializacion de Geografia" of which he has charge than in any other place. Government work in astronomy, geodesy, topography and mapping is taken care of by civil engineers, and government investigations in the field of economic geography are undertaken by people possessing no adequate geographic background. He writes that he has tried to sell the government on an Instituto Geografico but finds little interest displayed in the project. He ends his letter by saying "This lack of interest in geography in the tropical Andean countries certainly has an anthropogeographical explanation."

PERU

Dr. F. W. McBride has been trying for the past several months to interest Peruvians in the development of a Geographical Institute of the University of San Marcos. He writes: "My idea in setting up this Institute for the Peruvians has been precisely to offer training for students for fields other than teaching, for teaching possibilities here are very limited. I had in mind various possibilities of Government employment, both military and non-military. I have discussed with officials in Government departments the future for a trained professional geographer in agriculture, fisheries, mining, conservation, irrigation, transportation and other fields, and have found that the possibilities looked good enough to go ahead with the Institute. But nothing definite may be reported as yet; it's too soon to anticipate. As to the past, I can only say that very few courses in geography were scattered thru the various colleges of the University, none very scientific, and no organized curriculum. Until now, there have been no trained geographers offering the courses, no full-time professors in the field, and no one earning his entire living from the work, as is true of the whole staff of San Marcos. Romero, who teaches Economic Geography of Peru, one of the best men on the Peruvian staff, is a lawyer and a senator."

MEXICO

In Mexico² there are only two schools that give geography courses on a university level. These are both located in Mexico City. They are the Universidad Nacional Autónoma de México and the Escuela Normal Superior. Both have departments of geography. The Universidad has the larger department and offers the more advanced courses.

The Universidad department offers the masters and doctors degrees. Three years of study (six courses a semester) and a thesis are required for the masters, and for the doctors six additional advanced courses and a thesis are required. Usually one year of study beyond the masters degree is sufficient for the doctors. (To enter the Universidad or the Escuela Normal Superior, a student must have a *bachillerato*, obtained at graduation from a secondary school; or he must have a teacher's certificate. Usually the *bachillerato* is more or less equivalent to our junior college certificate.) Course subject matter and course requirements have been patterned after those in the United States. One year of mathematics and courses in physical geography (meteorology, climatology, cartography, elementary geology and geomorphology) and cultural geography (various regional courses, statistics and demography) are required for the masters. For the doctors, courses in geophysics, photogrammetry and laboratory courses in meteorology, climatology, cartography, geology and soils are required.

A critical observer of the Universidad department of geography would probably sense opportunity for improvement by a strengthening of the faculty. There are only four geographers on a staff of ten, of whom the Cuban geographer Jorge A. Vivó stands out conspicuously. The other six staff members are scholars of the old school, men with a variety of interests, and specialists, such as the mathematician Martínez Becerril and the geologist Robles Ramos. All the faculty must give courses in one or two other institutions in town or engage in government work or private business in order to make a decent living.

The department has been in existence for several years, but really has begun to function and to turn out students only since 1943. To date, two students have obtained masters degrees in

²The information on Mexico is taken from a personal letter sent by Professor Robert C. West of the Smithsonian Institution, Institute of Social Anthropology, Mexico, D.F.

geography. Eighteen majors are *pasantes* (those having completed all requirements for the masters degree except the thesis). In addition there are twenty-eight to thirty students majoring in geography at the Universidad.

The department of geography in the Escuela Normal Superior was started in 1936 and is now headed by the Cuban geographer Jorge Vivó. Only the masters degree is offered and courses are not as numerous or as technical as those of the Universidad. Many of the Universidad faculty are on the Escuela Normal Superior staff.

Opportunities for graduates in geography in Mexico are few. Of the eighteen *pasantes* and two graduates of the Universidad, five have found work in their field in government offices, thirteen have gone into teaching in secondary schools and in schools of college status (mainly normal schools) and two have been hired as professors by the geography department staff. Of those in government work, one is with the Dirección de Geografía in Tacubaya, one is with the Secretaría de Recursos Hidráulicos, two are research geographers in the Instituto de Geografía de la Universidad de México. All those who go into teaching must take a rigid course in teaching methods.

The Escuela Normal Superior has graduated fifty-four students with masters degrees, all of whom, naturally have gone into teaching in secondary schools, mostly within the Distrito Federal.

Geographical research similar to that in the United States has shown little progress. With the coming of Jorge Vivó a more or less definite research program has been established. Those mainly responsible for the program are Vivó Maldonado (a biologist and geologist with a Ph.D. from the University of Kansas) and Osorio Tafall (geologist and oceanographer). The most active part of the program is that devoted to the translation and publication of important foreign geographical works. Most of this is being done under the auspices of the Fondo de Cultura Económica. Oscar Schmieder's three volume work on the Americas has been translated from the German and published in a single volume called "Geografía de las Americas." Whittlesey's "Earth and State" is now in press; and Newbigen's book devoted to the study of animal and plant geography together with Köppen's "Grundriss der Klimakunde" have been translated and are now ready for printing. The physical geography section of Finch and Trewartha, "Elements of Geography," "General Cartography" by Raisz and

"Elements of Soil Conservation" by Bennett as well as other similar studies are being translated. A translation program has also been started under the auspices of the Sociedad Mexicana de Geografía y Estadística. Leo Waibel's work, "The Sierra Madre de Chiapas" has been published and several of Sapper's works on Central America are being translated.

In recent years, some progress has been made in original research. Pedro Carrasco's book devoted to meteorology has been published; his study on cosmography and Osorio Tafall's work on oceanography are being edited by Fondo de Cultura Economica. Several studies such as "Los Volcanes de Mexico" by Esperanza Yarza, a bibliography of geological works on Mexico, and a dictionary of geographical terms are being published by the geographic section of the Sociedad Mexicana de Geografía y Estadística. However, very little geographic material appears in the Boletín of this society. In recent years, important contributions to the geomorphology of Mexico have been made by the geologist Robles Ramos. Worthwhile map work is being done by the Comisión de Cartografía (government sponsored) and by the Servicio Geográfico Militar. Finally, many important articles on the geography of Mexico have appeared in the Revista Geográfica, put out by the Instituto Pan-Americano de Geografía e Historia. Unfortunately, this review has ceased publication owing to the shift of the section of geography of the Instituto to Rio de Janeiro.

PUERTO RICO

Because a Puerto Rican geographer, Dr. Rafael Pico, has achieved considerable success in the field of land planning, it may be well to mention the work offered in geography at the University of Puerto Rico. For some time university authorities have brought in geography teachers from beyond the island's borders. The author served as visiting professor in geography during the last semester of 1931-32 and again during the summer of 1940. Dr. Pico took his first work in geography in the author's classes and in those of Dr. C. F. Jones of Northwestern University, also visiting professor at the University of Puerto Rico in 1931-32. After coming to the United States for his doctorate, Dr. Pico returned to the University of Puerto Rico to establish a department of geography. But he was needed in land planning on the island; and altho he is still connected with the university, his major interest is with

the Puerto Rico Planning, Urbanizing and Zoning Board of which he is the chairman. Last year the University called Dr. Salvador Massip, the well known Cuban Geographer as visiting professor in geography.

SUMMARY

Before summarizing and drawing conclusions from the preceding paragraphs, it is well to point out that this effort is no attempt to make a comprehensive survey of the subject. Like the preceding study on Europe, the article is merely a start on a major problem. But the start does call attention to certain major facts.

Probably Brazil is doing more than any other Latin American country in training students of geography for employment in tasks outside the teaching field. Argentina and Chile are giving good geographic training and at least one school in each country is offering a doctorate either in geography alone or in geography and history. Little, if any, graduate work is offered either in Colombia or Peru, but there is hope for a well organized effort in the latter country. Progress is also slow in Mexico, altho some signs of improvement are in evidence. In none of the three countries is there much opportunity for geographers to find jobs outside the field of teaching. Thruout much of Latin America many who are attached to university faculties are part time teachers with a salary schedule so low that they must of necessity supplement their income by some other means. Many Latin American geography teachers giving graduate work and many Latin American professional geographers go to foreign countries to take advanced degrees after obtaining undergraduate credit in universities of their native lands. In the future this tendency may slowly decline, especially in the ABC countries of Latin America.

OUR OIL SHORTAGE

RAYMOND K. CASSELL

Indiana University

Shortage of oil was understandable during the war years when increasing quantities were consumed in the domestic manufacturing, transportation, and agricultural industries, and in the zones of hostilities by ships, planes, trucks, tractors, and mobile fighting equipment. We were aware that our ally demands for more and more oil plus the curtailment of foreign trade in oil made for the most acute shortages.

Now, nearly two years removed from the beginning of the "peace," congressional committees are discussing the measures to be adopted in order to relieve the prevailing short supplies, and the larger distributors are actually rationing their products to local retail outlets.

The consumer who is today caught short quite naturally wonders about the disposition of the oil no longer used in the war effort, and the great quantities normally imported. If he asks the local distributor about the low supply he may receive any of the several stock answers, namely, that as a nation we are using much more oil than we did ten years ago, particularly now, when oil surpasses coal as the principal source of energy; that while we are producing at maximum capacity the present supply problem is mainly one of inadequate refining and transportation facilities; or that we are running out of oil, a position taken by some oil industry spokesmen who insist that we should not expect to continue to produce two-thirds of the world's oil from less than one-third of the proven reserves, that speeding up production simply hastens the time when the resources of the United States will be exhausted.

PRESENT CONSUMPTION

The current Senate and House probes have revealed the fact that since 1941 our per capita consumption has increased more than 25 per cent. The growing number of motor cars, trucks, busses, industrial and home oil burners, diesel engines, and horseless farms has brought the nation to the point where it is using more oil than it is producing. There are 1,500,000 more trucks, 1,000,000 more tractors in use now than before the war. Since 1941 the increase in use of oil by railroads has jumped by 58 per cent, and 92 per cent of all locomotives on order are diesels. Con-

sumption of oil for production of electricity is up 47 per cent, and 68 per cent more home heating oil is now in use.

The increased production of oil which was stimulated by World War II has all but met the present growing demands which are now greater by 15 per cent than during the peak consumption period of the war. The American Petroleum Institute believes that the industry will manage the present emergency by making a wider use of existing transportation facilities (tank barges, tank ships, tank cars, trucks, pipelines), and as more steel becomes available refinery and pipeline additions will enable the industry to bring supply into balance with demand.

OIL RESERVES

That we are running out of oil is a statement born of competitive propaganda within the industry itself. Those concerns with large foreign holdings, naturally desiring our markets, would have it understood that larger quantities of foreign oil must be imported if we are to protect our domestic reserves. On the other hand companies who do not hold sizable foreign concessions, fearing that importation of cheap foreign oil might endanger their competitive position, would have it believed that domestic supplies are entirely adequate. Official statistics show that our country's known reserves in the ground at the end of 1946 were at the new high record of 20,873,560,000 barrels, enough to last from twelve to fifteen years at present rate of consumption without any new discoveries. Estimates on future reserves are controversial. Some in the industry believe that our undiscovered resources are vast and that future chances of discovery are greater than ever before. Yet others contend that we can no longer find oil as fast as we can use it.

The most optimistic note on reserves has to do with oil synthetics. A new process of economical liquefaction of natural gas, now nearing commercial applications, will, it is estimated, extend the quantity of the known reserves by one third. More significant from a long-range view is the production of oil from coal, the mineral which the U. S. Bureau of Mines estimates makes up 98 per cent of the nation's fuel reserves. The Standard Oil Company (NJ) in collaborations with two Pennsylvania coal companies at a pilot plant in Liberty, Penn., are exploring possibilities of making gasoline and gas fuel of high heat value from bituminous coal. If this project proves successful there will be little need for concern about oil reserves.

RALPH H. BROWN

1898-1948

Dr. Brown, Professor of Geography at the University of Minnesota and a frequent contributor to the JOURNAL OF GEOGRAPHY, died of a heart attack February 23, 1948. His death will be regretted by many readers of the JOURNAL to which he contributed five articles and forty-two reviews. His reviews were invariably so excellent that the editor permitted a score to be longer than most reviews in the JOURNAL.

Professor Brown served geography in several ways; he taught successively at Iowa State Teachers College, Peabody College for Teachers, University of Colorado and University of Minnesota (since 1929). He was secretary of the Association of American Geographers for four years and editor of its *Annals* since January, 1947. Besides numerous articles and reviews he was author of two books. *Mirror for Americans, Likeness of the Eastern Seaboard, 1810*, was a special publication of the American Geographical Society, 1943. This scholarly work of 344 pages will long be consulted. A textbook, *Historical Geography of the United States*, is an excellent 604 page survey of the character of American regions in early times and will be decidedly useful to those who seek an understanding of the backgrounds of present day America.

Dr. Brown was an exceptionally earnest worker of superior qualifications for the work he did and for the much additional work he hoped to do. The heart attack which ended his useful life was unexpected; he worked to the last.

Dr. Brown had four special interests: 1) To increase the understanding of our backgrounds. This was done by his extended studies of historical geography. 2) To share with others the results of his own studies and those of other earnest workers. This he did by skillful teaching and by his writing. 3) A third special interest was his desire to strengthen geography, illustrated by his painstaking work as secretary and then as editor of the A.A.G. 4) Another great interest, not least, was his fine family. He is survived by a wife, two daughters and a son.

We should not merely regret his passing; we should also be grateful for all the fine teaching, writing and other work which he did for geography.

S. S. VISHNER

THE NATIONAL COUNCIL AT WORK

COMMITTEE ON PREPARATION OF LISTS AND BIBLIOGRAPHIES OF MAPS

At the Charlottesville meetings the Executive Board approved the Report of the Planning Committee. The report "recommended that a committee of three be appointed for three years to prepare or have prepared material suited to publication in leaflet form. The first topics for the series should be selected from the following list or from topics approved by the Executive Committee: A bibliography on the use of maps in teaching; A list of map publishing companies; A list of maps of the Far East useful in teaching at the high school or college level; Suggest map activities at the intermediate or junior high school level; A list of selected maps produced by government agencies and now available for teaching."

The following committee was appointed in March: Katheryne Thomas Whittimore, State Teachers College, Buffalo, New York, Chairman; George Corfield, Oklahoma A & M College, Stillwater; Margaret S. Chew, State Teachers College, La Crosse, Wisconsin. Members of this committee will appreciate suggestions.

REPRESENTATIVE ON FULBRIGHT COMMITTEE

At an Executive Board meeting, Dr. Alfred H. Meyer was made official representative of the N.C.G.T. on the Fulbright Act Committee. Dr. Meyer is chairman of the A.A.G. Fulbright Act Committee.

SURVEY OF RESEARCH IN GEOGRAPHIC EDUCATION

Dr. Henry J. Warman, Clark University, is chairman of the committee.

The Planning Committee suggested that this committee be appointed for three years to:

"1. List the theses in geographic education completed after 1945 and, as far as possible, those in progress.

"2. Discover what geographers are carrying on studies, both formal and informal, in geographic education, and which geographers have special interests in aspects of geographic education, as for example, in evaluation.

"3. Learn what departments of geography or institutions offer special services designed to increase the effectiveness of geography teaching (other than course offerings).

"4. Discover which departments of education, including visual education, encourage graduate and research work in geographic education.

"5. Prepare the information gained in form suited to its nature and in accord with the plans of the publications and planning committees, as for example, annual lists of theses completed and in progress."

ASSOCIATED AND AFFILIATED ORGANIZATIONS

From time to time I hear about the splendid work that is being accomplished by associated and affiliated organizations. Will presidents or secretaries and state coordinators please send information about your activities to Professor George J. Miller, Editor of the JOURNAL?

Have coordinators or officers of associated and affiliated organizations seen *The Illinois Bulletin of Geography* prepared by the Illinois Chapter of the National Council of Geography Teachers? If not, perhaps the editor of the *Bulletin*, Professor Flemin W. Cox, 803 West Mill, Carbondale, Illinois, can supply you with a copy. Are there other bulletins? Who are their editors? Would you like to have a list of the editors and their addresses published on this page?

THOMAS FRANK BARTON, *president*

EDITORIAL NOTES AND NEWS

After June 5, the editorial offices of the JOURNAL will be moved to the Department of Geography, Indiana University, Bloomington, Indiana. All correspondence concerning manuscript and articles, or announcements to appear in the JOURNAL, should be sent to that address.

Our attention has been called to a typographical error in the March issue of the JOURNAL. The error in spelling has changed the meaning of the author. The correction should be made in the abstract of the article entitled "Geography in the Teacher Education Program" by Alfred H. Meyer. The last sentence of the second paragraph on page 98 should read: *Anachorisms* in geography . . . can no more give a correct interpretation of human affairs than can anachronisms in history.

The American Geographical Society of New York has announced awards for 1948 of three of its gold medals.

The *Cullum Geographical Medal* to be awarded "to those who distinguish themselves by geographical discoveries, or in the advancement of geographical science, particularly citizens of the United States of America," was awarded to Hugh H. Bennett, chief of the Soil Conservation Service, United States Department of Agriculture. Dr. Bennett is the founder and leader of the soil-conservation movement in the United States and has been called "America's Great Soil Doctor."

The *Charles P. Daly Medal* to be awarded "for valuable or distinguished geographical services or labors," was awarded to Henri Baulig, professor of geography at the University of Strasbourg, France. Professor Baulig is one of the world's leading geomorphologists, and his two-volume work on North America in the *Geographie Universelle* series has been described as the "best general regional geography of North America in any language."

The *David Livingstone Centenary Medal* to be awarded "for scientific achievement in the field of geography of the Southern Hemisphere," was awarded to Frank Debenham, professor of geography at Cambridge University. He was a member of the Scott Antarctic Expedition of 1910-1913 and was a prime mover in the organization of the Scott Polar Research Institute and its Director for twenty years. As a teacher he has also contributed notably to the advancement of geographical knowledge.

Syracuse University is adding two new members to its geography staff for next college year. DR. ROBERT E. DICKINSON, formerly of the University of London, will have charge of the work in Political Geography, the Development of Geographic Thought, and the Geography of Europe. DR. HENRY M. KENDALL, formerly of Amherst, will assume responsibility for introductory work in Geography and Climatology.

Central Washington College of Education at Ellensburg, Washington, is offering a course on the Columbia River, June 16 to July 16. Part of the course will be devoted to three field trips comprising ten days. Travel will be by chartered bus. The routes traversed will include studies of the area in and about the Ginkgo petrified forest, the Coulee Dam, the McNary Dam, and the fishing base near Astoria. The field work will be preceded by assigned readings and lectures scheduled on the campus where housing and meals may be secured. For further particulars write to R. M. Shaw, Professor of Geography, Ellensburg, Washington.

The JOURNAL of GEOGRAPHY

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DIVIDED INDIA

JOHN E. BRUSH

University of Wisconsin

The partition of India on the eve of Britain's relinquishment of control over its destiny resulted from a socio-religious conflict which threatens to lead to open warfare. The roots of the Hindu-Muslim clash go back ten centuries, but the present extreme manifestations of intolerance are of recent origin. Few people took seriously the proposal for separation of the Muslim areas as late as 1940. Yet it became apparent with the final achievement of Dominion Status that the political unity of the subcontinent which had been under British hegemony for a century could not be maintained. Trade and cultural ties were not strong enough to hold together the 389 millions of people who had come to be known to the world as Indians.

RELIGIOUS COMMUNITIES

Religion determines many of the social relationships of individuals and influences diet, dress and even the means of livelihood. Undoubtedly the differences between the religious communities have been exaggerated by alien rulers and by native leaders. The underlying cleavages are real, however, and fusion is incomplete tho adherents of various faiths are mingled. Thus, the geographical community is segmented by the religious community. The term, community, denotes common beliefs and practices, but also awareness of similar economic and political interests. It is not a grouping based on language or race.

Some of the Muslim leaders feared that their community would be dominated by Hindus in the All-India Federation which is to be governed according to a democratic constitution. It is true that the Hindu community, including all castes, made up 66 per cent of the population in 1941, while Mohammedans numbered 94 millions

Linlithgow Library.

Imperial Agricultural Research Institute

New Delhi

or 24 per cent of the total. But there are several smaller groups which do not share the Muslims' fear. Chief among them are Sikhs and Christians—about six million ($11\frac{1}{2}$ per cent) each.

The Muslims came to feel that they represented a distinct nationality and, as such, demanded a government and territory of their own, proposing that the state be known as Pakistan. Recognition of the demand for separation of the areas where they formed more than half of the population failed to solve the minority problem because of the wide intermingling of communities. Pakistan may be said to exist in every town and village where Muslims live who believe that their welfare depends upon the existence of the new state. The problem may be solved only by change of creed or by change of abode. Conversion is acceptable to few and we are witnessing migrations on a huge scale.

DISTRIBUTION OF COMMUNITIES

In considering the boundary question we need only to deal with Hindus and Muslims, and one small group—the Sikhs, who assumed an important role because of their solidarity and concentration in a single critical area. The map of percentage distribution in 1941 (Fig. 1) represents the composition of population just before the partition.

Hindus predominated in the closely-settled parts of peninsular India and in the middle and upper Ganges valley. They formed a quarter to a tenth of the population of the Punjab and the lower Indus valley, but much less than a tenth along the north-west frontier. In the Ganges delta the proportion of Hindus varied from more than three-fourths on the western margin to less than one-fourth on the eastern margin, tho in parts of the Brahmaputra valley farther east they formed more than half the population.

The highest proportion of Muslims was found in the north-west—a region subjected to repeated influxes of Mohammedan Turks, Iranians, and Afghans. Other religions were early eliminated in the mountainous borderlands, but the penetration of Islam was more significant on the Indo-Gangetic plains because the seat of Muslim power was established here and because larger numbers were won by intermarriage and mass conversion. As far east as Delhi they made up a quarter of the population and in the middle Ganges, 10 to 15 per cent. The success of the faith was astonishing in Bengal where, in the eastern part of the delta, was

found the greatest density of Indian Muslims, constituting more than three-fourths of the inhabitants. In central India Muslims established themselves as overlords but gained only a small fraction of adherents. The interior population was ten per cent Muslim

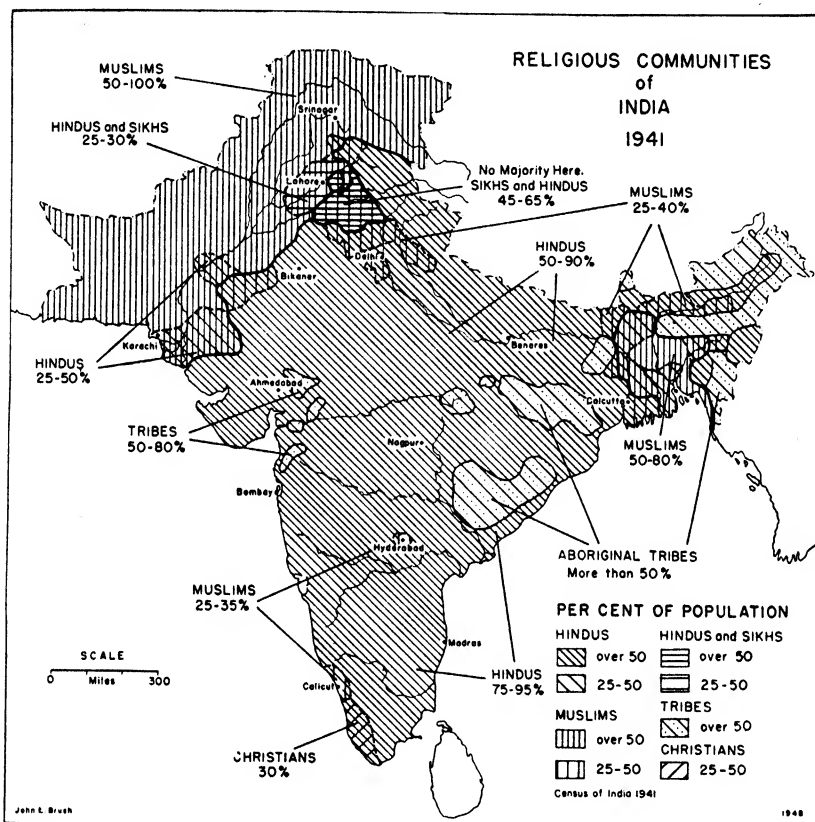


Fig. 1. The percentage distribution of communities has been altered by the transfer of Hindu and Sikh minorities from the north-west Muslim zone and the emigration of Muslims from the area between Lahore and Delhi.

but along the eastern coast their proportion was generally less than five per cent. The large west coast minority is descended from a medieval Arab trading outpost.

If the areas where either Hindus or Muslims had a majority in 1941 are delimited (heavy lines on Fig. 1) the boundaries are

found to coincide nearly everywhere—as in Bengal and Assam, and in the Thar desert and the Himalaya mountains—but in the fertile plains between Lahore and Delhi an area appears where no group held a majority. Precisely this area is the homeland of the Sikhs—a militant Hindu reform sect. Here they were most numerous altho they did not form even half of the population. The Sikhs were invited to join Pakistan but they chose to federate with India.

DIVISION OF COMMUNITIES

The boundaries of Pakistan approximate the line of 50 per cent Muslims. Table 1 shows how imperfectly the religious communities were separated. The two Pakistan areas embraced five-

TABLE 1. DIVISION OF COMMUNITIES

Community	All-India	Muslim-Majority Areas (Thousands)	Per Cent in Muslim Areas
Hindu	254,931	16,499	6
Muslim	94,389	53,431	57
Christian	6,317	522	8
Sikh	5,691	1,832	32
Total Population	388,998	73,362	19

Source: *Census of India 1941*, Delhi, 1943, Vol. 1. Data in second column are based on administrative districts in which Muslims had 50 per cent in British Provinces and Indian States, excluding Kashmir.

ninths of all Indian Muslims, of whom three in every five were in the eastern portion. The bulk of the forty million who remained in India were in the north: four million in East Punjab, 17 million in the Ganges valley (United Provinces, Bihar, and West Bengal) and one and a half million in Assam. Fifteen million were scattered over peninsular India with only two points of significant concentration: Hyderabad City, where the Muslim government is attempting to maintain independence, and in the vicinity of Calicut, where communal disturbances have occurred in the past.

About 16.5 million Hindus found themselves in Pakistan (three-fourths of them in the eastern part) and more than one and a half million Sikhs were in western Pakistan. It is the broad region of communal overlapping north and west of Delhi to Lahore and beyond that became the battleground during 1947. Emigration of Sikhs and Hindus from western Pakistan by the end of November 1947 is officially estimated to have been four million, with half a million yet remaining to come out. The influx of refugees to the

Union of India has been countered by an equal number of Muslims going west. At present virtually all Hindu, Sikh and Muslim minorities on each side of the western Pakistan boundary have been transferred. Tension exists elsewhere in the two Dominions but little movement has occurred. If all minorities were exchanged there would be twice as many Muslims entering Pakistan as there would be Hindus departing. However, it seems likely that such a disaster can be averted. Hyderabad State has agreed with India to keep the status quo for a year and the decision in Kashmir, it is hoped, will be reached with the mediation of the United Nations.

DIVISION OF RESOURCES

The uprooting of farmers, craftsmen, and merchants and the interruption of economic production has already created problems and the new international boundary will call for further adjustments.

The two Muslim areas which have little common history differ markedly in every respect. The western zone of Pakistan, together with the States acceding to it (Fig. 2), comprises more than 300,000 sq. mi. with a density over the whole of about 90 per sq. mi., ranging from 260 in the West Punjab to 95 in Sind and less than ten in Baluchistan. In contrast, the eastern zone covers only 54,000 sq. mi., having an average density of 775 and more than 1,000 around Dacca. Two-thirds of Pakistan's 70 million inhabitants live in the east which is one sixth of the total area. The Union of India, without Kashmir and Hyderabad, comprises 1,050,000 sq. mi., occupied by nearly 300 million people. Hyderabad and Kashmir, each 82,000 sq. mi., have populations of sixteen and four million, respectively. Portugal and France retain control of bits of coastal territory populated by less than a million altogether.

Per capita acreage under food grains reveals less contrast than gross area density between the two Muslim zones: 1.2 in the west and 0.4 in the east. The position of truncated India (0.7a. per capita) is not much better than eastern Pakistan and the food deficit of the war years served to emphasize the precarious demographic balance. Persistent movement of Bengali settlers into Assam during the past quarter century resulted from the pressure on agricultural resources in the eastern delta country. The ability of both Pakistan and India to resume rice imports from south-

east Asia is certain to be an important question in the near future. The small food surplus of the western zone of Pakistan and unused irrigable land along the Indus might provide a solution but great adjustments in food habits and mode of life will be necessary if the people of the eastern zone are to benefit, for wheat is the

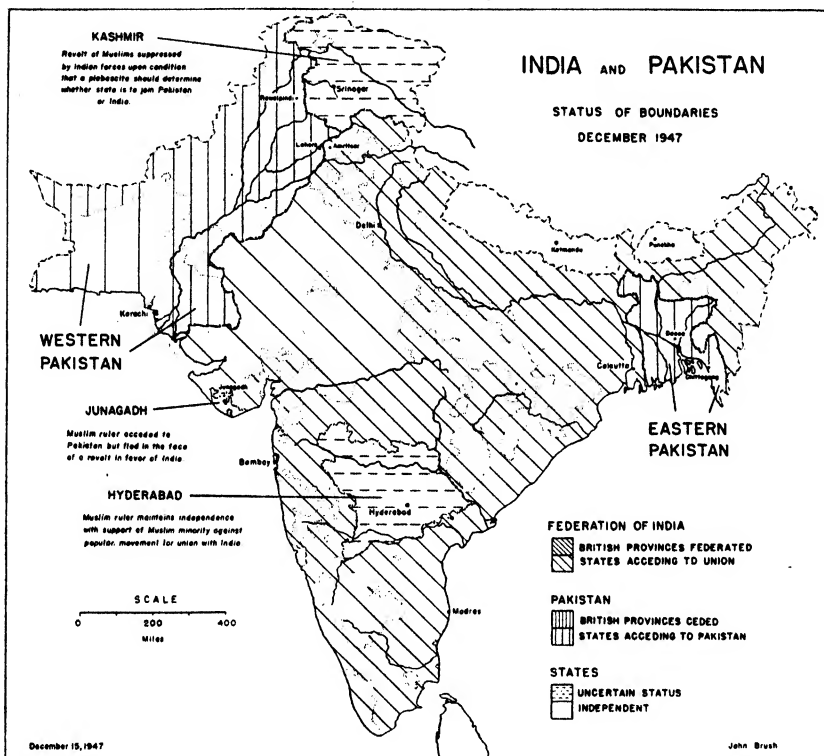


FIG. 2. The new political boundaries are subject to revision in Kashmir and Hyderabad, the two States which are expected to join Pakistan or India.

staple in the former area and rice is the main food crop in the latter.

Table 2 summarizes the division of agricultural and mineral production. The outstanding advantage of Pakistan regarding jute is outweighed by India's large share in other items. The better quality and yield of Pakistan cotton favors it more than acreage alone indicates. It is important to note that the major part of the All-India wheat surplus came from the Punjab and

Sind and the only reliable rice surplus came from Sind. The Muslim state does not contain the natural endowments necessary for heavy industry; whereas a variety of minerals suitable for industrial development exist in India. All of the high-quality reserves of iron, manganese and several other ores, as well as almost all of the coalfields, remain in India. In 1944 one per cent of India's production of 26.1 million tons of coal came from low-

TABLE 2. DIVISION OF RESOURCES

	All-India*	Pakistan	Per Cent in Pakistan
Agriculture (Thousands of acres) 1938-39			
Rice	73,951	19,898	27
Wheat	33,765	9,352	28
Cotton	20,788	3,505	17
Sugar	3,231	489	15
Jute	3,125	2,367	76
Tea	822	96	12
Mineral Production 1944			
Coal	26.13 mil. tons	0.26	1
Iron Ore	2.36 " "	0	0
Petroleum	97.5 mil. gals.	15.2	15
Workers in Large Industrial Establishments 1941			
Cotton (Spinning & Weaving)	594,881	16,348	3
Jute (Spinning & Weaving)	310,624	0	0
Iron & Steel (Smelting & Rolling Mills)	54,117	0	0

* British Provinces and Indian States, including Hyderabad and Kashmir.

grade seams worked in the West Punjab and Baluchistan and 15.5 per cent of the 97.5 million gallons of petroleum came from Attock on the Indus. In view of these circumstances it is not surprising that the factory workers of the Muslim areas were chiefly engaged in the processing of agricultural products: rice-milling and sugar-refining, tea-drying and jute-pressing in the east; cotton ginning and baling in the west. Small quantities of cotton textiles and ordnance supplies comprised the only other industrial output of Pakistan.

TEA AND JUTE PRODUCTION

The money crops of eastern India have long been jute and tea. Transport of both these commodities converges on Calcutta. Altho Pakistan's share of the tea acreage is one-eighth, the large Indian production must now move across Pakistan en route to

domestic or foreign markets. The most important jute-growing region (Fig. 3) lies east of the waterway formed by the lower Ganges and Brahmaputra. Jute manufacturing, however, is concentrated in the Hooghly riverain, readily accessible to the fuel

supply of the Damodar valley and to transshipment facilities at the Calcutta docks. Most of the raw jute of East Bengal is carried by boat across the delta.

A burlap shortage exists in many countries today on account of the newly-imposed jute export levy of Pakistan. Last year's crop was good but Calcutta mills are low in stocks and labor is scarce because communal tension prevented the usual influx of seasonal workers from the eastern delta. It is possible that enlargement of port facilities at Chittagong will enable Pakistan to ship raw jute overseas

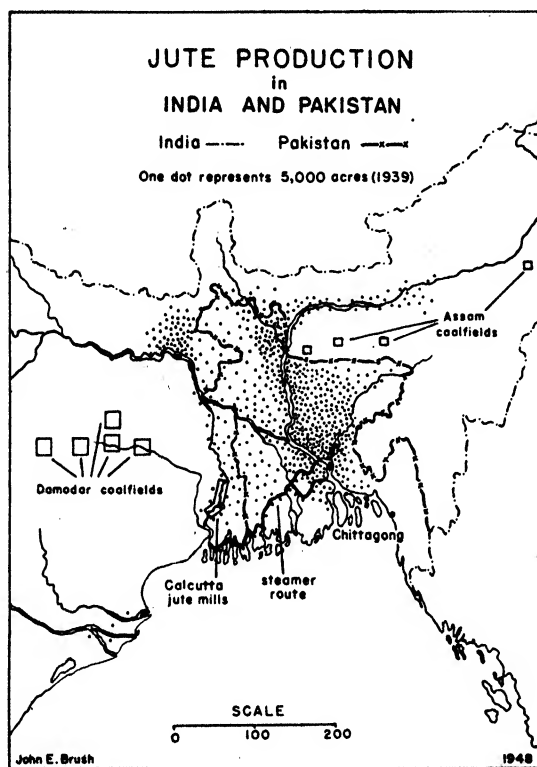


FIG. 3. Eastern Pakistan encompasses three-fourths of the jute acreage but the jute mills and industrial fuel supplies are under the control of the Indian Union.

directly, but establishment of mills here is another matter. The cost of water-rail transit of Damodar coal or the longer rail haul from Assam coalfields (Fig. 3) would place the industry at a disadvantage. On the other hand, India may increase jute acreage in West Bengal and Bihar. The tariff policies of the two governments will determine whether the world-wide tea and jute trade will continue to move down the Hooghly estuary. Disturbance of the previ-

ous optimum production conditions may so increase costs as to endanger the near-monopoly once held by the delta jute industry and reduce the importance of the tea industry.

IRRIGATION IN THE PUNJAB

The partition of the Punjab presents another problem. Here, a unified government directed the construction of a complex irri-

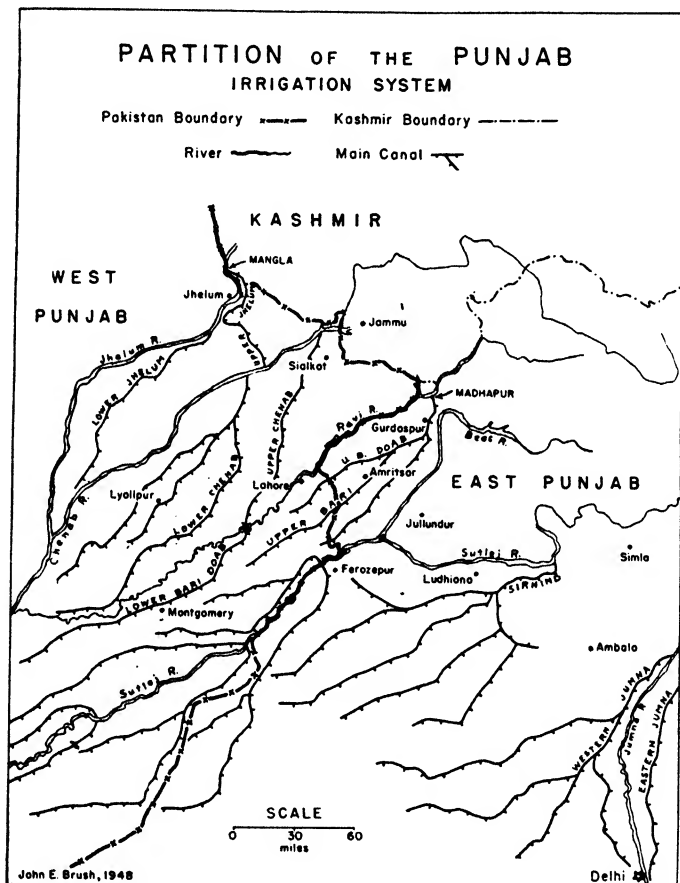


Fig. 4. International agreement will be required to regulate the use of irrigation water and hydro-electric power in the East and West Punjab.

gation system which provided a basis for the prosperous agriculture of the region. Rainfall declines sharply south-westward from

the Sub-Himalayan Punjab; so much so, that crops can not be raised west of Lahore without irrigation. Diversion dams located at the foot of the mountains (Fig. 4) and at other suitable points along the main streams bring water to the interfluves (*doabs*) by distributary canals. This nicely-balanced use of water resources permitted the colonization of the West Punjab by Muslims, Sikhs, and Hindus.

The new boundary runs slantwise across the watershed of the Punjab rivers, bisecting the irrigation system and placing western Pakistan's water supply at the mercy of India. The boundary commission arrived at the unhappy compromise which severs the complementary urban centers of Lahore and Amritsar and intersects the Upper Bari Doab canals. The Muslim claim to all territory north and west of the Sutlej River could not be upheld by the facts of percentage distribution of population (Fig. 1), but they had 50 per cent around Lahore and Gurdaspur, east of the Ravi River on the Bari Doab. Yet Amritsar, the holy city of the Sikhs, stands in the midst of the Doab and to give jurisdiction of the canal headworks at Madhapur to Pakistan would have put the Sikhs in a vulnerable position. The Muslims assert that the award enabled Kashmir to accede to India and to establish communications by a hastily-built road passing thru the foot-hills to the place where the Ravi debouches onto the plains.

Irrigation may become a serious problem if communal distrust persists. It is obvious that the amount of water taken from the Sutlej by the Sirhind canal will influence the supply available downstream in Pakistan. All of the irrigated tracts west of Lahore are indirectly dependent upon the Upper Jhelum canal, the headworks of which are not at present within the jurisdiction of Pakistan. Much of the flow diverted at Mangla in Kashmir reaches the Lower Chenab canal, thus permitting a great share of the Chenab River to be drawn off by the Upper Chenab canal. This canal waters not only the area north of the Ravi River but is led across it by an aqueduct to fructify the Lower Bari Doab also.

Hydro-electricity will be the key to whatever industrial development Pakistan undertakes. Existing and proposed electric power schemes in the Punjab are based on sites which lie in the mountains of India or Kashmir. This fact, in part, explains Pakistan's interest in gaining the accession of Kashmir. But international agreement, in any case, will be required to fully utilize irrigation and power resources of the Punjab rivers.

CONCLUSION

This brief survey of the geography of the partition of India outlines only a few of the problems facing the two Dominions. The fortunes of Pakistan rest upon the expansion of subsistence, together with the export of food grains and fibers. India needs these food surpluses to reduce its food deficit, which is made more severe by the division, and the raw materials to supply its textile industries. If the present blocks to trade are not removed, people on both sides of the boundary will suffer. But material considerations are often not the most significant factors influencing policy. The spirit of nationalism has been deeply stirred and no price seems too high to pay for independence.

GRADUATE TRAINING IN GEOGRAPHY*

S. VAN VALKENBURG

Clark University

Graduate education in geography should provide the best possible training for those who will form the future core of the profession, including those who will take leadership. The problem consists in selecting the right men and giving them adequate foundation on which they can later build their own house of knowledge. Graduate training is only the beginning, not the end.

This outline results from personal opinion and observation; many of its points are debatable and some may regard them as not well taken. It is not a record of what we do at Clark, altho, of course, we try to live up to the principles in which I believe. If I grade Clark on all items I must admit that we fall short in many instances; however, it is the goal we strive for.

What I wish to say can be divided into six parts:

1. Structure of a graduate department.
2. Selection of candidates for graduate training.
3. Study for the M.A. degree.
4. Study for the Ph.D. degree.
5. Placement of graduate students.
6. Cooperation between graduate departments of geography in different universities.

* Presented at the annual meeting of the National Council of Geography Teachers, University of Virginia, December, 1947.

STRUCTURE OF A GRADUATE DEPARTMENT

It is difficult to give rules for the structure of a graduate department. Few departments—if any—are financially strong enough to have freedom to develop without limitations. Of course, the ideal structure is a well-rounded staff covering the major subdivisions of geography; a staff which can give all, or most, of its time to graduate training. They should be authorities in their fields, but that they represent variety of personalities and of approach is equally important. Too much inbreeding in the larger graduate departments should be avoided. Variety of opinion is a needed stimulus. Outsiders, American as well as foreign geographers, should be brought in frequently as visiting professors or lecturers. Exchange of professors between American graduate departments should be established even if only for one week visits, in which the visitors can give the best of their thoughts and studies. Teamwork is of greatest importance in a graduate department. A racing shell does not move smoothly if rowed by individualists, brilliant, as they may be,—it needs a well-balanced synchronized crew to make winning time. However, even in a crew there are outstanding figures; advanced graduate students should be permitted to work for a time with geographers of other universities (returning afterwards to the university of their choice for a degree) to profit by association with those they consider especially good in their selected field. In Europe students were wont to go to key men. It was the man who counted, not the university. In my own case, I studied at five universities and I have never regretted it.

The number of graduate students in a department should be limited; there should be enough to give a graduate atmosphere and a certain amount of mental competition but not so many that close contact between students and staff is lost. In Clark we have tried to gain that atmosphere by our workroom, where students spend most of the day in close contact with each other; in other universities it has been accomplished by other methods. Except for undergraduate honor students, the line between graduate and undergraduate should be sharp in class as well as in study.

It is also of value to expose students to authorities in related fields. Large universities have the advantage that many such fields are well represented on their campuses; otherwise, they should be brought in. A graduate department should not be an isolated unit. Geographers will be called upon later to work with

others; contact with such fields should be made during the training period.

It has already been mentioned that most departments have limitations as far as their structural development is concerned and that often the burden of undergraduate teaching falls too heavily upon them to allow sufficient time for graduate instruction. In several cases, the line of demarcation between undergraduate and graduate training is not definite, and the graduate becomes chiefly an advanced undergraduate. Departments which contemplate giving graduate work should carefully consider whether or not they are really prepared to do so. There is certain prestige in graduate work; in some cases pressure might come from the administration. Points to be considered should be not only availability of the right men and time to be given to graduate training but also right equipment, such as books and maps; graduate training demands a well-stocked library and map collection for reference. A cartographic laboratory and workroom should be provided. Equipment for field surveying, meteorological observations, and the interpretation of airplane pictures are all important.

Two steps must be considered when graduate instruction is introduced: first, training for the A.M., requiring basic courses and second, training for the Ph.D., with greater emphasis on the fields of concentration and methods of research. It can not be too strongly stressed that the decision to give, or not to give, graduate work is most important. For instance to give graduate degrees to teaching assistants without providing them with well-rounded graduate training does more harm to the profession than good.

SELECTION OF GRADUATE STUDENTS

Selection of graduate students should be made carefully, to protect the staff from wasting time and effort on those who have no chance of succeeding. An accepted candidate himself should be reasonably confident that he has ability and background to make good, while the staff at the same time regards him as a worthy prospect. In selecting students the following precautions should be taken:

1. The candidate should be certain that he wishes to study geography; he will need that conviction for the road ahead is long and tortuous.

2. His scholastic record should be good. At Clark we have to

satisfy the members of a Credentials Committee which scrutinizes closely all qualifications of a candidate.

3. He should have endorsement, if possible, of other reputable geographers. The recommendations should be carefully written, because in some ways the future career of the man involved is at stake.

4. Personal interviews are very helpful, especially because personality is a distinct factor for success.

5. The candidate should have had an adequate undergraduate training, with emphasis upon a broad cultural background. Ideally such training should include the following fields:

- (a) English Composition.
- (b) Proficiency in German or French or other modern foreign languages.
- (c) Some strict scientific discipline such as Mathematics, Physics or Chemistry, Astronomy or Geology.
- (d) Biology, Anthropology, or Ethnology.
- (e) Some course or courses in Humanities (Economics, Sociology, etc.).
- (f) History.
- (g) Logic, Philosophy.

6. The candidate should have a major in geography or its equivalent. I should like to point out that quite a few have entered the field of geography as graduate students without such a major and have made good in the profession. Such will happen when the candidate discovers geography to be his chosen field too late to fulfill requirements for a major, or too little or no geography was offered at the college the candidate attended. Personally, I prefer a high quality man with a well-balanced cultural background, altho with little training in geography, to a man of lesser ability but having a long array of credit points in geography. In such cases, however, it will be necessary to make up deficiencies and take important undergraduate classes tho already accepted as a graduate student.

7. The candidate should be required to take a Graduate Record Examination. It is true that Geography is not included but the results are a good indication of his mental ability and knowledge and marked deficiencies in his background can be remedied.

While graduate departments can select from applicants the students they like to have, and many of them are excellent

prospects, it is nevertheless necessary to point out that we do not always get the best men. What can be done about it? Geography is a young field of study and has not been accepted as worth-while by all colleges and universities. Moreover, we face the disadvantage that geography is still neglected in most high schools and that the average matriculant in a college does not have it in mind when he makes out his program. Students come to us often by chance because they have been exposed to geography, and like it enough to continue; but that exposure might have come too late to change their plans. Geography should appeal strongly to young men and women if given a chance. The present influx of graduates is due more to personal contact with geography in war service than to training in universities. The average student in a large university has no idea that there is something called geography as a field of advanced training. If he had it, he might be strongly attracted by it. Accordingly, a large number of men who might have become prominent geographers are lost to us because we still represent a comparatively unknown field of study.

I cannot propose an immediate remedy except to select our graduates wisely and train them so well that they become prominent in university circles and thru their leadership attract young men and women of the highest caliber.

STUDY FOR THE MASTER OF ARTS

Altho the M.A. degree has relatively declined in value, the training for that degree is still of utmost importance. Here is laid the foundation on which to build. The training should be primarily basic, but on an advanced level. It must be basic for those who have no plans to continue their studies and will use the degree for teaching purposes. It should be basic also for those who go on for the higher degree, in order that they may have a good general knowledge before specialization in the field in which they are especially interested.

There will always be differences of opinion about what is basic. In general, the training should be a balance between the physical background (climate, terrain, soils, organic life, hydrography) and man's cultural response (economic, political and demographic). The controversy for or against determinism is an absurd one. Man must live in a certain environment; it depends on circumstances whether he more or less controls that environment or whether the

environment is the dominating factor. However, whatever the approach to the training may be, stress must be put on field work for all graduate students should become familiar with field methods in research and gain a feeling of strength and independence in out-of-door work.

Training for the M.A. degree should take two years to be effective. The prospective teacher needs that time in order to secure a solid background before he faces his classes; the potential Ph.D. candidate needs that time in order to be ready for later concentration. He should be ready to take up Ph.D. work without handicaps. The student interested in teaching needs besides his basic courses, regional knowledge—because of the importance of regional courses in his later teaching—as well as a course in Geography in Education provided, of course, that the student has had the necessary courses in education required for a teaching position. Teaching assistantships can also be of great help, giving the student teaching efficiency (besides financial advantages) but time given to that should not interfere seriously with the graduate training.

The writing of a thesis is still important, and should not be replaced by term papers. It gives the student valuable training in collecting and organizing material. A thesis with field work is preferable to a library thesis, altho not always possible.

The results obtained in the study for the M.A., the quality of the thesis, and also the performance of the student in his oral examination, make it possible for the Staff to advise him whether he should proceed to a higher degree or consider the M.A. his final academic achievement. In the latter case he should not feel disgraced; he is trained to be a good teacher and our profession needs many.

One problem which has been scarcely considered is the question of whether or not general deficiencies as shown by the Graduate Record Examination should be made up. One university actually provides for classes in fields such as English Literature for graduate students who are deficient. While this is probably a rather radical suggestion, graduate students should be asked to take undergraduate classes if necessary for their graduate work. For Instance, undergraduate meteorology should be requisite for graduate courses in climate. In summarizing, it may be said that the M.A. training should not lose value in a world clamoring for

Ph.D.'s; it is an important part in the training of all well-rounded geographers.

STUDY FOR THE DOCTOR OF PHILOSOPHY

Training for the Ph.D. degree is the most essential function of a graduate department, which has facilities to extend its activities beyond the M.A. degree. It is in this training that individual treatment should come to the foreground because each student presents a separate case. Consequently, the following suggested outline has only general value:

OUTLINE OF TRAINING

1. Making up deficiencies in basic training; these might occur when students after their A.M. shift to another university with a different point of view.
2. Taking more specific classes which did not fall under basic training.
3. Training in field technique on a more advanced level.
4. Seminars and discussion groups.
5. Advanced work in the major field thru research courses under supervision.
6. Broadening of geographic experiences thru carefully planned traveling, made possible thru travel fellowships.
7. Preparation for the preliminary Ph.D. examination including selection of fields of questioning.
8. Passing the language examination, if possible, before the preliminary examination is taken.
9. Selection and writing of a dissertation based on field work, an essential in the training of a professional geographer. He should be trained to become a productive scholar.

In the preliminary Ph.D. examination the stress should be on the major field which the student should know exceedingly well. Questions should stress the ability to think and not concentrate on factual knowledge.

While up to now the majority of our Ph.D. students have gone into teaching, it is quite possible that a change will come. The market for teaching geographers will gradually become saturated but replacements will occur. At the same time demand for research in geography has increased. The government has discovered that well-trained geographers are indispensable in various branches of government. It was true during the war and is true also in times of peace. Planning for state, county or city—so popular now in

European reconstruction—opens great possibilities. The field of the geographer in private business has scarcely been touched and yet who can judge the potential producer or consumer of the products involved better than a geographer? Graduate departments should keep that shift in mind; we must be ready to meet demands for such a market; in fact, we should try and make the world conscious that research geography can be of great help in many directions.

PLACEMENT

In placing students after they are prepared, major stress should be put on consideration of whether or not the man will fit into his new position and be happy. Salary should not be the only criterion for acceptance or non-acceptance, important as the financial factor is, especially after a period of study which has generally exhausted resources. When our graduate departments have a limited number of students, the staff obtains a good insight on the students, not only as geographers but also as individuals who react to social environment. A wise choice can accordingly be made. In these days of heavy demand for trained geographers, the process is perhaps somewhat neglected, but it is most important in order that geography can gain the respect of other fields and the new instructor becomes a valuable member of the faculty of his new school. Letters of recommendation should be honest, and the confidence of such information should be rigidly observed.

It is difficult to come to a definite conclusion on whether or not we should encourage students to interrupt the studies and accept positions, especially between the preliminary examination and the dissertation. Financial considerations at that time may be very important and it seems often that the thesis can be written (and the field work done) while teaching in some college. The unfortunate result is that many postpone completion of thesis work for many years and some never finish. One remedy to discourage long postponement would be to limit the duration of the validity of candidacy for the preliminary examination, but it is easy to make strict rules and difficult to keep them.

CO-OPERATION BETWEEN GRADUATE GEOGRAPHY DEPARTMENTS

In an expanding field—and if we do not expand our spheres of influence, we are doomed—it is essential that various centers where graduate work is given keep in contact with each other. They can

agree about certain principles, such as rules of admission. They can frequently exchange students as well as professors. They are all working with the same goal in mind—to be of service in training better citizens and to increase knowledge of the world and its many problems. While they may disagree on certain minor points, the feeling of solidarity should prevail. There should not be cut-throat competition. There is a place for all. Neither the National Council, the A.A.G. nor the A.S.P.G. offer the necessary framework for such co-operation. It is to be hoped that it will be possible in the near future to find a way to bring the graduate departments together into some kind of organization. Isolated we may fail, as a strong co-operating unit, we will succeed.

UNIT VI. THE U.S.S.R.—LAND OF THE SOVIETS FOR COURSE IN GLOBAL GEOGRAPHY*

MARY VIOLA PHILLIPS

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I. OVERVIEW

“Of all the great countries of the world, U.S.S.R. is the least known to Americans.”

We cannot afford to remain in ignorance about the geography of one of the world's major powers. A geographic understanding of U.S.S.R. is vital for an adequate appreciation of present world problems. This unit attempts to present information about the land, its location and size, the climatic conditions, physical features, the various peoples, their activities and their cultures, natural resources and their distribution, the industrial development and all other environmental and human factors which lie behind this country's achievements.

II. OUTLINE OF SUBJECT MATTER

A. Location and Size

1. Range of latitude—almost entire country lies north of United States—Black Sea and Caspian Sea in latitude of Great Lakes.
2. Range of longitude—extends almost halfway around earth.
3. Area—one-seventh of earth's surface.
4. Location in respect to land and waterbodies. Proximity to the United States.

* For other units, see the JOURNAL for Sept. and Nov., 1945, Mar., Apr., and Sept., 1946, May, 1947, Jan., 1948.

B. Population

1. Composition and distribution of
2. Languages and dialects
3. Number—(one-tenth of world's people)
4. Government—structure, organization, administration
 - a. Constitution of 1936
 - b. Five Year Plan—Economic Objectives
Results—industry—agriculture—transportation—education—mining and power development
5. Religion
6. Education

C. Major Physical Features

1. Lowlands—vast plains not much above sea level
 - a. Central European Lowlands
 - b. Central Russian Lowlands
 - c. Black Sea Lowlands
 - d. Central Asian Lowlands
 - e. West Siberian Lowlands
2. Highlands of Southern U.S.S.R.
 - a. Influence of east-west direction in flow of rivers
 - b. Influence of east-west direction on climate
 - c. Name of highlands from east to west
3. Northern Highlands
4. Baltic Uplands
5. Central Russia Uplands

D. Climatic Characteristics—cold and aridity dominant features

1. Controlling factors
 - a. Latitudinal position—80 per cent area in middle latitudes, 16 per cent area in high latitudes, 4 per cent area in sub-tropical
 - b. Wind belts—prevailing westerlies carry oceanic influence inland bringing vapor, prevailing northeast winds—originate in heart of continent
 - c. Marine influence—very little
 - (1) South—mountain barriers cut off influence from Indian Ocean
 - (2) Pacific lies to leeward—wind blows off short
 - (3) Arctic Ocean—frozen much of year—area of ice free water as a source of vapor is not large
 - (4) Atlantic—most rain is of Atlantic origin
 - (5) Seas and lakes have warming influence on regions bordering them
2. Precipitation
 - a. Low precipitation dominates—only a few areas in west and higher mountains receive more than 20 inches rainfall annually—Asia and northeastern Siberia have under 8 inches
 - b. Rain occurs chiefly in summer
 - c. Heaviest precipitation in west because rain comes largely from Atlantic

E. Vegetation or land belts

1. Tundra
 - a. Location and extent—north of Arctic circle and within 250 miles of ocean
 - b. Climatic conditions—long winters, short summers
 - c. Animal life—birds, polar foxes, reindeer, ermine
 - d. Vegetation—lichens, mosses, low brush, dwarfed birch and willows
 - e. Inhabitants—sparse—nomadic life

2. Taiga

- a. Location and extent—south of Tundra—extends 4,000 miles across northern Russia—average breadth from 600 to 1,000 miles
- b. Climatic conditions—cool temperature, ice bound two-thirds of year—winters severe, summer temperature 50 to 68°F.
- c. Animal life—wild boars, reindeer, leopards and Manchurian tiger
- d. Vegetation—forests one-fifth of that of earth—coniferous such as pines, spruce and larch—softwoods—birch and aspen—oak and other hardwoods—meadows intersperse
- e. Inhabitants and activities

3. Black soil belt—"Grain Breadbasket of Europe"

- a. Location and extent
- b. Favorable climate—sufficient rainfall
- c. Soil—richest in world—top soil five to six feet deep
- d. Vegetation—natural and cultivated—leading crops
- e. Level surface—ease of farming

4. Steppe

- a. Location—southern third of country—east of Caspian Sea the steppes pass into semi-arid
- b. Climate—dry
- c. Vegetation—grass lands—treeless
- d. Animal life

5. Desert

- a. Climate—under 10 inches rainfall
- b. Vegetation of oasis—figs, dates, grapes, apricots, cotton
- c. Animal life—sheep, goats, horses, camels

6. Mountains

- a. Climate—zones extend from summer at base to perpetual winter at top
- b. Animal life—tiger and wild boar on warmer slopes, bighorn sheep on higher and cooler crests
- c. Vegetation—steppe vegetation on lower slopes to 3,000 feet—forests to 6,000 followed by Alpine meadows—snow line 9,000 feet

F. Natural Resources

1. Mineral wealth

- a. Vast deposits of coal—ranks next to U.S. in coal reserves—coal is chief source of power
- b. Large quantities of iron ore in central and southern regions
- c. Oil in far southeastern section
 - (1) Rich petroleum fields of Baku on Caspian, Batum on Black Sea, fields north of Caucasus and north of Central Urals
 - (2) Sakhalin chief area in Far East
- d. Other minerals—manganese, copper, lead, zinc, bauxite, nickel, gold, platinum
- e. Non-metals
 - (1) Potash—northern Urals
 - (2) Apatite—source of phosphate—north of Arctic Circle in Khibin Mts. and Kola Peninsula
 - (3) Asbestos—Urals
 - (4) Gems and semiprecious stones in Ural Mt. region
 - (5) Koalin—Ukraine
 - (6) Fire clays—Moscow Coal Basin and Ukraine
 - (7) Mercury—Donets Basin and Urals

f. Hydroelectric—mountain streams and large rivers

g. Forests

G. Agriculture

1. Amount of arable land—87 per cent of Soviet Union or 432,700,000 acres
2. Location of arable land—most found west of Urals
 - a. Greatest agricultural area is irregular wedge of land extending from Leningrad to the Black Sea and east to Lake Baikal
3. Agricultural frontiers
 - a. North—fringe settlement where short growing season limits crop yield
 - b. South—areas of drought with limited and erratic rainfall
4. Methods used to increase agricultural area
 - a. Use of virgin steppe land in Siberia
 - b. By irrigation of dry lands east of Volga or Middle Asia
 - c. Drainage of marshes
5. Organization of farms
 - a. Collective farms—co-operative share of ownership under active control of government—workers receive share of harvest
 - b. State farms—workers paid wages
 - c. Equipment—modern tractors and harvesting combines are promoted thru Tractor Stations
 - d. Home life of farmers
6. Products
 - a. Grain crops—wheat and rye dominant crops—barley, oats, corn and rice
 - b. Technical Crops
 - (1) Cotton as far north as 48° N. Latitude
 - (2) Flax—White Russia near Moscow and Leningrad
 - (3) Sugar beets—Ukraine, around Kursk, Caucasus, Middle Asia and Far East
 - c. Subtropical crops—grapes, tea, oranges and other citrus fruits

H. Other Industries

1. Lumbering widespread
2. Textile manufacturing—linen, cotton, wool
3. Food industries
4. Fishing industries—sturgeon and caviar dominant in Volga River section
5. Grazing—use of steppes for cattle and sheep grazing—breeding of fine, spirited horses
6. Mining

I. Transportation

1. Railroads—difficulty in building on freezing and thawing soils—15 per cent of earth never thaws below 5 feet
 - a. 1940—62,500 miles as compared with 36,350 miles in 1913
 - b. Trans-Siberian Railroad—extent
2. Utilization of Waterways
 - a. Rivers,
 - (1) Most rivers flow north toward icebound ocean or enter land-locked seas
 - (2) Volga is premier waterway—carries half country's freight
 - (3) Elaborate system of canals
3. Highways
 - a. Natural dirt roads predominate
 - b. Poorly developed—scarcity of crushed rock limits foundation material
 - c. Motor transport beginning
 - d. Hard surfaced roads in 1941—30,000 miles as compared with U.S. 1½ million miles

- e. Use of reindeer in Arctic
- f. Camel caravan across Kazakstan both winter and summer
- 4. Airways and their effect on the geography of the country
 - a. Polar regions are the new air frontiers with flying fields and weather stations
 - b. Makes possible use of Arctic for trade by opening sea routes and harbors
 - c. Airplane unlocking the wealth of nation—obstacles such as mountains, trackless forests, great distances and deserts overcome by airplanes
 - d. Rapid development of air routes—Alaska—Siberian route, great internal air routes—covered 86,800 miles in 1944
- J. Communication
 - Use of radio, press, telephone as compared with other countries
- K. Chief Cities
 - 1. Location
 - 2. Accessibility
 - 3. Accessibility to mineral wealth
 - 4. Industries
 - 5. Architectural beauty
 - 6. Historical associations
 - 7. Home life in cities
- L. Relation of U.S.S.R. to Other Countries
 - 1. Neighbors in Europe
 - a. Position in respect to European nations before World War II
 - b. Position in respect to European nations since World War II
 - 2. Neighbors in the Far East
 - a. Russian influence—extent of
 - b. Past and present policy toward Japan, Korea, China
 - 3. Russian and British Empire
 - a. Effect of British influence in Near East
 - b. Past and present controversy over outlet to sea in south
 - 4. Russia and the United States
 - a. Location in respect to United States—Bering Strait
 - b. Past and present relationship

III. STUDY ASSIGNMENT SHEET

Unit VI. (Laboratory Work) U.S.S.R.

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World Almanac

1. In what latitudes does this country, whose land area is as big as the face of the moon, lie? What is its area in square miles? Compare its area with that of the world. Compare it with the United States.
2. Between what two degrees of longitude does U.S.S.R. lie? Between what two degrees of latitude? Approximately how far around the earth does this country extend?
3. Describe the topographic features of U.S.S.R. Name the mountain systems. Where are they located? Where are the lowland areas? What occupation does the topography lend itself to?
4. On an outline map of the U.S.S.R. show the following:
(Desk map or blackboard map)

rivers	industrial centers
mountains	inland cities
seas	seaports
agricultural areas	hydroelectric plants
5. What are the chief climatic characteristics? Describe the temperature and rainfall. (Summer and winter)
6. Find the climatic data for the following cities of U.S.S.R.

Cities	Av. Summer Temp.	Av. Winter Temp.	Annual Precipitation
Moscow
Leningrad
Vladivostok
Baku
Tomsk
Odessa
Yakulsk
Tashkent
Batumi

7. What is the population of U.S.S.R.? Compare its population with five other large countries. With the world population. Make a list of the different groups of people living within U.S.S.R.
8. Use the latest statistics you can find and fill in data regarding the present wealth of natural resources in U.S.S.R. and in the United States

Natural Resources	U.S.S.R.	U.S.A.
(1) Known coal reserves	.....	.....
(2) Prospected oil fields	.....	.....
(3) Iron ore beds	.....	.....
(4) Forest reserves	.....	.....
(5) Black soil area	.....	.....
9. How does the Soviet Union compare with other nations of the world in the natural resources listed above?
10. Make the following maps to show the vast achievements in the first two decades of U.S.S.R.
 - (1) Water Power
 - (2) Major Industrial Districts

(3) Major Mining Districts

(4) Transportation—Railway and Airways

11. Study the different vegetation on land belts of U.S.S.R. and complete the following chart.

Belts	Location	Climatic Characteristics	Natural Vegetation	Chief Activities
Tundra
Taiga
Steppe
Desert
Mountains

12. Where are the chief centers of agricultural production located? What are the leading crops of U.S.S.R.? What natural factors favor the raising of these crops? How is agriculture organized in U.S.S.R.?
13. Compare the leading crops of U.S.S.R. with the leading crops of U.S.A. Select five crops that are grown in both countries and make a graph to compare production.
14. How well developed are the transportation systems of U.S.S.R.? Describe the role of railroads, motor transport, water transport and air transport.
15. Compare the mileage of the following methods of transportation with United States and the world.

	U.S.S.R.	U.S.A.	World
Railroads
Highways
Airways

16. To what extent have the rivers been used for transportation? Name them. What are the advantages? the disadvantages?
17. On what oceans does U.S.S.R. face? What are the disadvantages that U.S.S.R. must face in ocean transport? What outlets must U.S.S.R. use in her ocean transport? Compare the extent of its coastline with that of United States. Why are the seacoasts of little value?
18. What animals are used for transport? In what areas? Why?
19. How has the use of the airplane helped to unlock the wealth of the nation? What activities are being carried on in the Arctic coastal region in respect to air navigation?
20. The country of U.S.S.R. is so large that many of its people live farther away from Moscow than do people of New York City and other cities of the world. On a globe find the great circle distances between Moscow and the following cities.

Cities	Distance from Moscow
New York
Vladivostok
Berlin
Tashkent
Helsinki
London
Warsaw
Novosibirsk
Petropavlovsk
Alma Ata

Place these cities on a polar projection map and connect each to Moscow with a line on which the distance is given. (Desk maps or blackboard map)

21. Summarize in paragraph form facts concerning the following topics—religion, education, government, Five Year Plan, and sports.

22. Make a list of the leading exports and imports of U.S.S.R. With what countries does U.S.S.R. carry on the greatest amount of trade?
 23. Make a time chart showing important events that have taken place in U.S.S.R. from 1900 to the present time.
 24. What are the present relations of the U.S.S.R. with the Far East? the Near East? the United States?
 25. Make a collection of newspaper clippings, maps and other current materials on present day happenings in U.S.S.R.
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SOME PRINCIPLES OF GEOGRAPHY

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Whenever we meet some of our old students who had geography with us, possibly ten years ago, it is interesting to note that what they have remembered thru the years are the principles and the ideas brought out in geography classes and not the facts. After more than thirty years of college teaching I am convinced that principles are what should be emphasized in geography teaching and that minor emphasis can be placed upon facts. If students retain facts, it is because of memory. If students retain principles, it is because teachers have stimulated student thinking and have had some part in developing their reasoning ability. This is not meant to say that a reasonable amount of facts is not important. They are important because no one can understand principles without a basis of factual knowledge. My point is, simply, that facts should not be taught alone by themselves for their factual value, but taught, rather, in connection with the principles of modern geography.

I find that for a few weeks it is difficult for my students to grasp the difference between a principle and a fact. May I illustrate the difference by two or three examples? It is a fact to say that New York City is at the mouth of the Hudson River where it enters the Atlantic. It is a principle to say that cities tend to develop at or near the mouths of navigable rivers which drain productive hinterlands. It is a fact to say that the Swiss people are prosperous, highly civilized, and a respected people among the nations of the world. It is a principle to say that a hilly or mountainous topography tends to develop a backward people. From these examples one may see that a geographic principle often states a generality which is usually true, but to which many exceptions may be found.

In most college and university administrative set-ups, geography has to declare itself as a social or physical science. Administrative machinery does not permit it to straddle the fence. Critics of geography tend to ridicule our science because we can not pigeon-hole ourselves as either a social science or a physical science. When a decision must be made, I believe that geography is much more on the side of a social science than it is a physical science.

They criticize further because we can state but few principles that are exact. When we do establish an exact principle in geography, it usually concerns weather and climate, or physical geography. The great field of geography which has to do with man and his relations to his environment is seldom productive of exact principles. Therefore, geography, like the rest of the social sciences, must be classed as an inexact or abstract science. This should not frighten geographers or cause them to hang their heads because they must formulate generalities and call them principles. The word "generality" seems to be in some disrepute. I can't see why it should be. To me generalities are far more mentally stimulating and thought provoking than facts. Most people cannot possibly become very excited because the sum of the squares on the legs of a right triangle equals the square on the hypotenuse. It was true yesterday, is today, and will be tomorrow. But in Human Geography such an idea is exciting because, geographically, the sum of the squares of the legs doesn't always equal the square of the hypotenuse. This is because of the variations of the human element. One can never tell for sure what the responses and reactions of the human being is to be to environment and heredity. For example, referring again to hilly or mountainous environments, sometimes they produce an Abraham Lincoln. Discussion of a generality stimulates thinking and argument. It develops a critical point of view on the part of the student. He becomes less inclined to swallow whole what the book or his instructor says.

In an attempt to clarify the difference between principles and facts, or rather to emphasize principles and to show teachers how mentally stimulating the study of geography can be, I offer examples of five principles under each of the factors of geographic environment. They are not meant to be exhaustive but, rather, suggestive. If you try them out with your more mature students, you will find that they stimulate discussion, develop reasoning, and that they cause a student to read his textbook with a much more critical

eye. It should be noted that some of these principles can be placed under more than one factor of environment.

LOCATION

1. The farther from the equator, the greater the variation in the length of days and nights during the year.
2. The farther from the equator, the less is the influence of the direct rays of the sun.
3. The mathematical or natural location of a place never changes but the vicinal location of the same locality changes with the development of better transportation or of natural resources.
4. Towns or cities tend to develop where rivers used to be forded.
5. A product which is obtained from the interior of a continent finds it difficult to compete in foreign markets with that produced along a sea coast.

AREA

1. Land masses can be so large that the climate of their interiors tends to be inhospitable to most human activities.
2. Nations can be so large that their people lack unity.
3. The smaller nations tend to be more dependent on the outside world than do the larger ones.
4. Small nations are likely to be danger spots in world politics.
5. Large size in a nation makes it less vulnerable to conquest by an enemy.

FORM

1. For a continent, great shoreline irregularity is more advantageous than regular coast lines.
2. Large indentations of the ocean tend to moderate adjacent land climates.
3. A peninsula tends to have much the same human and physical responses as an island.
4. Major protuberances on a continent's outline often tend to intersect ocean trade routes.
5. For a state or a nation, a compact blocky form tends to be more advantageous than an attenuated form (Uruguay versus Chile).

LAND FORMS

1. Mountain environments tend to attract few professional people.
2. Isolated islands tend to develop qualities of language, custom and dress considerably different than mainlands.
3. Because of the danger of floods and poor drainage, deltas are often not good places for human occupation.
4. Mountains which parallel a sea coast are more of a barrier to contact between the sea and the land than are those which trend at right angles to the coast.
5. Plateaus in the Tropics tend to be used for living abodes and temperate agriculture while those of middle latitudes are more often used for grazing and mining.

WATER BODIES

1. Large bodies of water tend to moderate the climate of lands provided the prevailing winds are from off the water.
2. Water bodies, if effective on the climate of the land, will send their moisture influence farther inland than their temperature influences.
3. It takes a much larger body of water to influence the precipitation of lands than it does to affect the temperature.
4. Transportation costs on the oceans tend to be cheaper than that on inland waters.
5. In the growth of a nation, in its youth, people tend to use their inland waters for navigation; in maturity they use the valleys for roads and railways; while in old age they may turn again to the use of the streams for navigation.

WEATHER AND CLIMATE

1. When weather is unchanging as in the rainy low latitudes people do not talk about it.
2. The higher the civilization the higher the latitude.
3. All other conditions being favorable, immigrants tend to follow their homeland isotherms.
4. The windward sides of mountains tend to be the rainy sides while leeward sides usually lack precipitation.
5. The higher the altitude the lower the temperature and pressure.

SOILS

1. A good soil region, even as a poor one, tends to trade mark or brand the people who live on it.
2. The better moist tropical soils tend to be in those physiographic locations where the soil is being renewed each year.
3. The steeper the slope the thinner the soil and the more dangerous it is to plow it.
4. Soils of dry regions tend to have all the elements of fertility.
5. The South Eastern quarter of the United States tends to depend more upon residual soil for its agriculture than any other quarter.

MINERALS

1. The mining industry does not usually distribute population equally over as large an area as does agriculture.
2. Mineral fuels tend to be the products of the rocks under plains.
3. Mining may develop both boom and ghost towns.
4. Mining tends to be a destructive exploitation.
5. Nations tend to quarrel over oil, iron ore, and coal quicker than over other minerals.

PLANTS

1. Plants tend to do best when grown about the middle of the poleward half of their habitat.
2. Plants in the Tropics grow in great variety while in the temperate regions there is less variety but great numbers of a given species.
3. Around a water body plants tend to zone themselves according to their water requirements.
4. Windward sides of mountains tend to be better forested than leeward sides.
5. Man's agriculture habitat tends to be widened because of the long summer days of high latitudes.

ANIMALS

1. Tropical waters tend to yield great varieties of fish while temperate waters yield fewer varieties but greater schools of each variety.
2. If a newly discovered continent fails to have animals which

can be domesticated it slows up the conquest of the continent by man.

3. Land areas which are isolated from other lands have an animal life which is usually less farthar advanced in evolution than lands which are connected.
4. Hunting and fishing for commercial purposes cannot compete with increasing populations.
5. Wild animal life tends to be restricted to those lands which are not useful for other purposes.

MAN

1. Man is as lazy as he can afford to be.
2. Civilization is a product of reasonable adversity.
3. "The great trouble with most people and with most races is not that they lack ability, but that they do not make full use of what they have."*
4. A high per capita consumption of fish usually means a low standard of living.
5. People who evaporate sea water for their salt supply usually have a low standard of living.

Two American geographers have been outstanding in the development of geographic principles. They were Dr. Ellen Churchill Semple and Dr. Ellsworth Huntington. Since both are lost to us the cause of geography in the United States needs missionaries to carry on their work. In my opinion, too many of our geographers are interested in facts for facts sake. In my humble way I hope that this article may serve to keep the lamp of geographic principles burning.

* Ellsworth Huntington, Principles of Human Geography.

GEOGRAPHIC ORIGINS OF RELIGIOUS DIVERSITY IN EURASIA

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I. INTRODUCTION

Is variety in the physical environment partially responsible for religious diversity in Eurasia? Is variable rainfall one of the factors which have facilitated the rise of Islam in Southwest Asia? Is enervating climate related to the prevalence of Hinduism in India? Have stimulating climate and dependable rainfall any connection with the dominance of Confucianism in China and Christianity in Europe? These are some of the main questions to be analyzed in this paper.

For the purposes of this investigation it will be profitable to classify each religion according to whether it is militant or pacific, and optimistic or pessimistic. Those religions which advocate acts of aggression for any purpose will be classified as militant. Those which condemn acts of aggression for any purpose will be classified as pacific. Those which assume that personal immortality is preferable to personal extinction will be classified as optimistic. Those which assume the opposite will be classified as pessimistic.

Three great divisions of Eurasia will be analysed in this paper: the Humid Middle Latitudes; the Dry Areas; and the Humid Low Latitudes. The High Latitudes will be ignored on account of population sparsity and retarded culture.

II. MILITANT OPTIMISM IN DRY AREAS

A. Islam

1. *Extent.* Islam is almost completely confined to the dry areas of Eurasia. Detached and isolated outliers of Islam occur in Albania, Northeast India, and Oceania. However, these minor exceptions are quite insufficient to nullify the general rule of Moslem containment in Dry Areas. The strongholds of Islam are North Africa, South West Asia, Arabia, Turkestan, and Northwest India.

2. *Characteristics.* Islam is a religion of militant optimism. The orthodox Moslem is relentlessly hostile toward counter religionists in accordance with the maxim of Mohammed that all infidels must be compelled to choose among "Islam, tribute, and the sword." Moslems who die as the result of combat in Holy War

against the infidels do so in confident expectation of immediate admission to a paradise indescribably alluring and surprisingly materialistic.¹

Islam promises the faithful perpetual residence in an earth-like Heaven abounding in "black-eyed maidens" and mirth-provoking but non-intoxicating beverages. Islam regards personal extinction as being neither possible nor desirable.

3. *Explanation.* Altho Christianity secured a foothold in Southwest Asia 580 years before Islam, the latter overtook, outstripped, and uprooted the former in that area with remarkable rapidity. One reason for the triumph of Islam over Christianity in Southwest Asia has been economic instability arising from variable rainfall.

As a general rule the variability of rainfall increases as its amount diminishes.² Those areas which have the smallest amount of rainfall also have the least dependable rainfall. Highly variable rainfall may be tolerable in a region having a considerably greater average rainfall than is absolutely necessary for satisfactory crops and pastures. But the same phenomenon is catastrophic in dry areas whose average rainfall is barely sufficient to provide sustenance for wide-ranging nomads. Years of comfortable abundance alternate with years of desperate scarcity. Were it possible for the dry-area nomad to adjust his herding operations to the same amount of rainfall each year, he could become self-supporting at all times, even if average rainfall were quite low. However, years of devastating drought abruptly deprive the nomad of his means of livelihood. His waterholes dry up, his herds die off, and his food supply runs out. At such times he must either plunder or perish. He must drive the people of other tribes away from the few waterholes not yet empty, he must steal the herds and treasures of outsiders, and he must raid city dwellers and farmers in the oases and on the margins of the desert. The habits acquired in dry years tend to persist in wet years. Many nomads steal during all phases of the rainfall cycle. This kind of situation gives rise to a tribal morality as opposed to a universal morality. For economic, social, and military reasons the nomad is a good neighbor to his fellow tribesmen, but an exceedingly poor neighbor to the out-

¹ William Stearns Davis, *A Short History of the Near East*, Macmillan, New York, 1943, p. 117 ff.

² Glenn T. Trewartha, *An Introduction to Weather and Climate*, McGraw-Hill, New York, 1947, p. 227.

sider whom he views as his natural prey or enemy. Nomads accustomed to tribal morality are infrequent converts to Christianity whose basic ethical concept is universal morality, i.e., friendly treatment of all men at all times.

The aggressive proclivity of the dry-area nomad is thoroly incompatible with Christianity but quite congenial with Islam. The injunction to present the infidel with a choice among "Islam, tribute, or the sword" was an excellent pretext for the Saracenic and Ottoman hordes to attack their neighbors. Even after the bulk of the dry areas of Eurasia had been Moslemized, it was still possible for the nomads to engage in Holy Wars. The supply of nearby infidels having been depleted, a vast stock of heretics could be conjured up from time to time. Theological disputes such as the succession to the Caliphate of Bagdad could become the occasion for extensive blood-letting and bone-crushing.

III. PACIFIC PESSIMISM IN HUMID LOW LATITUDES

A. Hinduism

1. *Extent.* Hinduism flourishes in the more humid regions of India and in Southeast Asia. It exerts negligible influence outside of the Humid Low Latitudes of Eurasia and Oceania.

2. *Characteristics.* Completely unlike Islam, Hinduism is a religion of pacific pessimism. The orthodox Hindu disapproves of force and violence as instruments of policy. The doctrines of Non-violence and Passive Resistance to foreign rule enunciated by Mohandas K. Gandhi accord with Hindu temperament and tradition. Altho there have been noteworthy departures from these methods, the Hindus as a people are far from being warlike and aggressive.

The foremost goal of the orthodox Hindu is escape from the cycle of reincarnation in which the soul migrates to a new body whenever an old body dies. Hinduism judges life to be fundamentally evil, painful, and repugnant. Hinduism asserts that the total extinction of individual personality is a most commendable end for human endeavor.

3. *Explanation.* One factor which probably accounts for the prevalence of Hinduism in Humid Low Latitudes is an enervating climate which tends to deprive the people of Humid India and Southeast Asia of the energy and stamina required for the most effective utilization of natural and human resources. Kithal aggre-

gations deficient in the physical drive necessary for the satisfactory solution of the basic material problems of mankind are liable to reach the pessimistic conclusions that life is unavoidably irritating, burdensome, and disagreeable; and that the extinction of personality is the only escape from unbearable distress. For a community which has arrived at these conclusions, a religion of pacifism and pessimism like Hinduism is a consistent ideological adjustment.

There are several respects in which the climate of the Humid Low Latitudes of Eurasia is inferior to those of its Humid Middle Latitudes and its Dry Areas relative to effect on human energy.

Human energy tends to reach its highest level when the rate of body heat loss is neither too fast nor too slow. As a general rule the rate of body heat loss becomes too slow when average temperatures rise above 65° F. as in the Humid Low Latitudes of Eurasia. Average temperatures are substantially lower and more invigorating in Europe, North China, and Central China. Average temperatures in South China are similar to those in India and Southeast Asia. However, North and Central China have been far more vigorous and potent than South China in molding East Asian culture. All founders of Chinese dynasties were born north of the Yangtze River.³

Unlike the Humid Middle Latitudes of Eurasia, the Dry Areas have no substantial advantage over the Humid Low Latitudes as regards average temperatures. However, the dry areas share with the Humid Middle Latitudes the advantage of having more stimulating temperature cycles than the Humid Low Latitudes. The changeable temperatures of the former have a decidedly more favorable effect on human energy than the monotonous temperatures of the latter.

Another advantage of the Dry Areas as compared with the Humid Low Latitudes of Eurasia, is a faster rate of body heat loss by way of perspiration. The rate of evaporation of all moisture, including body moisture, is more rapid in dry than in wet areas.

B. Indian Buddhism

1. *Extent.* The Indian type of Buddhism is practically confined to the Humid Low Latitudes of Eurasia.

2. *Characteristics.* At the present time there is no fundamental

³ Lin Yutang, *My Country and My People*, Reynal & Hitchcock, New York, 1935, p. 19.

theological discrepancy between Hinduism and the variety of Buddhism prevalent in the subcontinent of India and Southeast Asia.

3. *Explanation.* Hinduism and Indian-type Buddhism are practically identical adjustments to a common environment.

IV. PACIFIC OPTIMISM IN HUMID MIDDLE LATITUDES

A. Chinese Buddhism

1. *Extent.* The Chinese type of Buddhism persists thruout China and Japan despite a marked decline in its influence during the past 1,000 years.

2. *Characteristics.* Altho Hinduism and Indian Buddhism have become quite similar during several millennia, a striking difference has developed between Indian and Chinese Buddhism. The latter has evolved from a pessimistic into an optimistic creed. Instead of regarding escape from the cycle of reincarnation as his foremost purpose, the Chinese Buddhist now anticipates admission to Heaven, or fears condemnation to Hell.⁴ Nirvana, or total extinction, remains a theoretical possibility, but has ceased to be a desideratum. Like the other major Chinese religions, Buddhism now judges life to be worth living, and looks forward to its continuance on this and other planes of existence.

3. *Explanation.* One factor probably responsible for the metamorphosis of Buddhism in China is its having been transplanted from a region of decidedly enervating climate to one of moderately stimulating climate. Having more energy and stamina than the people of Humid India, those of China are better able to attack the material problems of mankind and are less inclined toward despair, resignation, passivity, and weltschmerz. The general outlook of the Chinese is optimistic whereas that of the Indians is pessimistic. In order to convert a community, the advocates of an ideology must accommodate its tenets to the general outlook of that community to some extent. No community can be persuaded peacefully to accept an ideology totally at variance with its general outlook.

B. Confucianism

1. *Extent.* Like the Chinese type of Buddhism, Confucianism extends thruout China and Japan.

⁴ Kenneth S. Latourette, *The Chinese: Their History and Culture*, Macmillan, 1938, p. 127.

2. *Characteristics.* There is disagreement as to whether Confucianism should be classified as a religion. In any event it has become the dominant force in molding Chinese culture. It has been to China what Christianity has been to Europe, Islam to Southwest Asia, and Hinduism to India.

Confucianism is primarily a moral and political philosophy. It is only secondarily and incidentally theological. Many scholars suspect that Kung Fu Tze (Confucius) was an agnostic who advocated religious rituals and observances, not because he thought that supernatural forces exist, but merely because he thought that widespread faith in their existence is essential to communal order. At the present time, however, most Confucianists believe in a Supreme Being and personal immortality.

Confucianism is pacific. On moral and political grounds Kung Fu Tze was decidedly opposed to war, terrorism, and brutality.

Confucianism is optimistic. Given certain moral and political reforms, Kung Fu Tze believed that eminently satisfactory living conditions could be established in this world. And most of his followers now anticipate and desire a continuance of their spiritual existence in a next world. Confucianists agree that life is or can be worth living.

3. *Explanation.* The comparatively stimulating climate of East Asia probably is partially responsible for the pacific optimism of its two greatest religions, Confucianism and Chinese-type Buddhism, whereas the comparatively enervating climate of Indian and Southeast Asia probably is partially responsible for the pacific pessimism of their two greatest religions, Hinduism and Indian-type Buddhism.

C. Christianity

1. *Extent.* Christianity covers Europe, the Americas, and Australasia. Its manifestations outside of Eurasia will not be discussed here. It is sufficient to note in passing that the characteristics of Middle Latitude Christianity differ from those of Tropical Christianity in the Americas in important respects.

2. *Characteristics.* Christianity is pacific and optimistic. It is opposed to aggressive war for any reason. It implies that life can be made worth living on Earth, and promises eternal life to the faithful hereafter.

3. *Explanation.* As Islam and other creeds of militant optimism have certain advantages over Christianity in Dry Areas, so do

Christianity and other creeds of pacific optimism have certain advantages over Islam in humid areas.

It has been noted that a dry environment strongly urges man to engage in aggressive warfare of a periodically recurring, if not a constant nature. Other factors being equal, contrary circumstances exist in a wet environment. Precipitation and means of sustenance are more adequate, stable, and secure. There is far less, if any, need for aggressive warfare in order to insure group survival. In a wet environment, aggressive warfare is a matter of choice, not necessity. Wet area peoples rarely attack their neighbors unless convinced of the likelihood of decisive victory without excessive casualties. The idea of recurrent or continuous warfare is repugnant to wet-area peoples. It would involve a great outflow of blood, an exceedingly uncertain inflow of treasure, and would be unnecessary to group survival.

From the viewpoint of opportunistic expediency, persistent aggression is the soundest policy in dry areas, whereas sporadic aggression is the soundest policy in wet areas. With its demand for incessant war against infidels and heretics, Islam coincides with amorally sound policy in dry areas, but obstructs it in wet areas. On the other hand, Christianity opposes amorally sound policy in dry areas, but constitutes no insurmountable obstacle to it in wet areas. An occasional adventure of profitable aggression can be organized in Christian nations provided painstaking measures are undertaken to create the illusion of defensive warfare.

It has been noted that there is probably a significant correlation between the comparatively stimulating climate of East Asia and its religions of pacific optimism. The same line of reasoning applies to Christianity in Europe.

V. CONCLUSION

The physical environment is one of the factors which probably influence man in his choice of religion in Eurasia. Religions of militant optimism such as Islam tend to develop in the dry areas of Eurasia; religions of pacific pessimism such as Hinduism and Indian Buddhism in its Humid Low Latitudes; and religions of pacific optimism such as Chinese Buddhism, Confucianism, and Christianity in its Humid Middle Latitudes.

VIEWING FILTERS EASE READING OF COMPLICATED MAPS

RONALD L. IVES

Indiana University

Many of the more complicated modern maps, in which elevations are indicated by various shades of color, water features are shown in blue, and culture is shown in black, are quite difficult to read, because of color and contrast conflicts between the various elements, so that continued study of them is very tiring.

A considerable part of this difficulty can be eliminated by "dropping out" one of the colors by use of a viewing filter, which consists of a piece of colored glass of about the same color as the objectionable or confusing map element.

For most maps, on which hypsometry is shown in various shades of yellow, brown, or red, a red filter, such as a Wratten A (deep red), is most useful. When it is used, the hypsometric features merge with the white background, the water features, printed in blue, are darkened, and the black cultural features appear not only still black, but with increased contrast.

When it is desired to emphasize the hypsometry, a blue viewing filter should be used. This will cause an apparent darkening of features printed in red, yellow, and brown, and will lighten features printed in blue. Black printing will remain black under all conditions.

When maps are studied for many hours a day, viewing filters of very high optical quality are desirable, to prevent serious eye strain. For occasional use, not exceeding half an hour at a time, colored sun glasses, obtainable at the "dime store," will be found both suitable and inexpensive.

As a general rule, a simple filter will "drop out" its own color, lighten colors spectrally near it, and darken colors spectrally distant from it.

THE NATIONAL COUNCIL AT WORK

Thirty-fourth Annual Meeting

The National Council of Geography Teachers will hold its Thirty-fourth Annual Meeting, Friday and Saturday, November 26 and 27 in Chicago. Sessions will be held in the Palmer House where living accommodations are also available. The National Council for the Social Studies will also meet at Thanksgiving time and will hold its sessions in the same hotel. Members of both organizations are welcome to all programs. The National Council cordially invites members of all geography organizations and persons interested in geography to all program meetings except the General Assembly. Further details concerning the program for the forthcoming meeting will be announced in October.

OUTLINE OF TENTATIVE PROGRAM

Friday

9:00-12:00 A.M. General Session

This program will consist of the Greetings and Response and papers by Professors Freeman, Whitaker, Cressey and Scarfe. The first three speakers are well known in the United States. Professor Scarfe, Institute of Education, University of London will be a Visiting Professor at Syracuse University this fall. Another paper may be added to this program.

Noon Hour—State Coordinators Luncheon

2:00-4:00 P.M.

Sectional Meetings on Conservation; Color Transparencies; Field Trips; Gamma Theta Upsilon.

Evening Session 6:30 P.M.—Banquet

The address by Dr. Preston E. James is entitled: "On the Treatment of Controversial Topics in Geography."

Saturday

9:00-12:00 A.M.

General Session on "Geographic Education for World Understanding." Dr. Earl B. Shaw will be chairman of this session. Some of the papers will be given by Dr. Colby, Dr. Van Cleef, Dr. Poole, Dr. Percy and Dr. Nystrom.

*2:00—General Assembly***EXECUTIVE BOARD**

The Executive Board will have its first meeting Thursday evening, November 25. Persons interested in having the board consider some items of business should send their letters to the President before November 10th. If possible send carbon copies to Secretary Kohn.

Research in Geographic Education.

The following people have been appointed to a committee to make a survey of research in geographic education:

Dr. Henry J. Warman, Clark University, Worcester, Massachusetts, Chairman
Dr. Otis W. Freeman, U. S. Office of Education, Washington, D.C.
Dr. Fred K. Brannom, Chicago Teachers College, Chicago, Illinois
Miss Ruth Hoffman, George Peabody College for Teachers, Nashville, Tennessee

Field and Travel Experiences for Teachers.

At the Charlottesville meetings the Executive Board approved the report of the Planning Committee. This report states "That a committee of three be appointed for three years to promote field and travel experience by 1) informing the members of the N.C.G.T. of teacher exchanges, traveling fellowships and other such opportunities, and encouraging teachers especially trained in geography to apply for such appointments; 2) urging committees and other agents to consider the peculiar fitness of trained geography teachers for such exchanges and fellowships; 3) arranging hospitality when possible for geography teachers visiting in the United States and helping American geography teachers make contacts with geography teachers abroad; 4) encouraging state councils to arrange field trips for their members; 5) cooperating with the N.E.A. and other educational organizations that are promoting travel for teachers."

Miss Pauline P. Schwartz, Professor of Social Science, New Haven State Teachers College, New Haven, Connecticut, has accepted the responsibility of heading this committee. Other members of the committee will be announced soon.

Academy of Political Science.

Dr. Adelbert K. Botts, State Teachers College, Trenton, New York, was our official delegate to the meeting of the American Academy of Political and Social Sciences held in Philadelphia in April.

Professional Paper No. 8.

Professional Paper No. 8 is now available. It consists of five papers on geography curricula that were published in the April issue of the JOURNAL. Four of the papers were prepared for the Annual Meeting held in Charlottesville, Virginia, last December. This Professional Paper represents part of the plan recommended by last year's president, Alfred H. Meyer, to promote and publicize curricular studies in geography. Publication of another paper on professional training in geography is under consideration. Copies of Professional Paper No. 8 may be secured from Professor Clyde Kohn, Department of Geography, Northwestern University, Evanston, Illinois, for fifty cents each.

THOMAS F. BARTON, *President*
National Council of
Geography Teachers

EDITORIAL NOTES AND NEWS

The Fiftieth Anniversary of The Geographic Society of Chicago was celebrated by a dinner in the Grand Ballroom of the Stevens Hotel on February 21. Nine hundred members and guests of the Society participated.

There were presented:

Three *Citations* in recognition of distinguished service in editing geographical journals for a total of nearly eighty-five years, to George J. Miller, Editor of THE JOURNAL OF GEOGRAPHY, official organ of the National Council of Geography Teachers; to Miss Gladys M. Wrigley, Editor of *The Geographical Review*, official organ of the American Geographical Society of New York; and to W. Elmer Ekblaw, Managing Editor and Editor of *Economic Geography* published by Clark University.

Three *Merit Awards* in cash in recognition of eminent achievement in geographic writing, to Glenn T. Trewartha for his volume, *Japan, a Physical, Cultural, and Regional Geography*; to Stephen B. Jones for his volume, *Boundary Making, a Handbook for Statesmen, Treaty Editors, and Boundary Commissioners*; and to Malcolm J. Proudfoot for his volume, *Measurement of Geographic Area*.

The *Geographic Society of Chicago Gold Medals* to Miss Zonia Baber in tribute to the founder who initiated the organization of the Society; to Burton E. Holmes, the distinguished dean of the illustrated geography lecture platform; and to John T. McCutcheon, eminent reporter, author and world traveler for broadening the geographic horizons of the American public.

Four *Helen Culver Gold Medals* to Wallace W. Atwood, Sr., for distinguished research in Physical Geography, and as a founder of the Society; to Charles C. Colby, for distinguished leadership on the frontiers of geographic thought; to Vernor C. Finch, for distinguished contributions in Economic Geography, and to Derwent S. Whittlesey, for distinguished achievement in Political Geography.

The Helen Culver Gold Medal or The Geographic Society of Chicago Gold Medal was awarded in earlier years to William Morris Davis, Rollin D. Salisbury, J. Paul Goode, and Ellen Churchill Semple.

GEOGRAPHICAL PUBLICATIONS

Mineral Resources of the United States. Staffs of the Bureau of Mines and Geological Survey. 212 pp. Public Affairs Press, 2153 Florida Avenue, Washington 8, D.C.

The data for *Mineral Resources of the United States* were compiled by members of the staff of the United States Geological Survey and the Bureau of Mines. Many of the data, including many of the maps and graphs, were presented as testimony in hearings of the Subcommittee of the Committee on Public Lands of the United States Senate. Such material, however, has not been available to the public. In the light of tremendous demands upon our resources for consumption in our own country as well as throughout the world, this volume becomes significant. It is undoubtedly the most authoritative report yet published. Probably nothing to equal it has appeared since the numerous volumes dealing with the conservation of our resources, published many years ago. The authors have endeavored to put into understandable form the accumulated mass of scientific data and the necessary abundance of scientific calculations. This attempt appears to the reviewer to have been very successful. For example, Figure 2, indicates in a concise form reserves in terms of production and reserves in years of consumption. Figure 4, presents in a concise tabular form our relative self-sufficiency in minerals. It shows those in which we are virtually self-sufficient and those for which we are dependent on foreign sources. The volume is broken down into 49 chapters with separate chapters for each of 39 different minerals. This makes the material very definite and gives it a high degree of usefulness. Maps, graphs, and statistical tables help to clarify the discussion. It appears to the writer that this volume will be indispensable to every secondary and college teacher in the country.

B. H. Schockel. *Manufactural Evansville*. 273 pp., The Author, Aurora, Ind. 1947, \$2.50.

This volume is an exhaustive study of the development of manufacturing, 1820-1933, in the largest city of southern Indiana. Considered are the local setting, the influences of the Ohio River and the surrounding area, and its position in the nation. The evolution considers the chief periods and influences. Another chapter discusses the chief manufacturing plants, especially their alignment and growth. The final chapter discusses the manufactural trade pattern, both for purchases and sales, and the evolution of the trade pattern. In the appendices are many tables supplementary to the 52 in the text, and notes on the 38 illustrations.

Dr. Schockel's volume represents much careful work and is of value not only to persons interested in Evansville but to nearly everyone much interested in urban geography, because it presents well various topics not generally considered, and possesses considerable suggestiveness for persons interested in studying other cities.

STEPHEN S. VISHER

Indiana University

Gertrude Whipple and Preston E. James. *Our Earth, and Using Our Earth*. Illustrated. Macmillan Company, New York 11, N.Y. 1947. \$1.88 and \$2.20.

These two books are called basal geographies. The first, *Our Earth*, is written for use in the third grade. It contains 245 pages about half of which are used for colored maps and full and half page kodacrome pictures. The second book, *Using Our Earth*,

designed for fourth grade use has 295 pages and is very similar in make-up to the first. Both books are printed on good quality paper in clear type of suitable size for small children. The bindings are durable and of convenient size for use by small children. The purpose, that of presenting clear concepts that are basic to geography readiness, is a worthy one. This purpose is accomplished for the most part. The pictures aid greatly in making clear the concepts.

These little books are attractive, and are also conveniently useful. They contain lists of "Questions and Things to Do" as well as helps for using the index. One regrets, however, that the textual material, especially that in *Our Earth*, has not been more carefully edited. It seems, that, in an attempt to get down to the child level, there has been a bending backward in order to end numerous sentences with prepositions, which in some instances has made the sentence more cumbersome and less clear. On page 40 a different order of sentences would contribute to clarity. And again on page 134, the text does not really make clear what an island is. Page 150, near the bottom, states that the inner part of the tree "makes a thick soup called wood pulp." Page 168, gives the idea that a little water animal has leaves, quote "Each leaf waves in the water to catch food."

I fear that residents of the Corn Belt would not appraise highly the portion of the book which shows corn being cut by hand, page 92. Page 87, says "One horse can pull the plow as he walks between the rows." Page 86, says "John walks on one side of" the wagon and his father on the other, while they "snap off the dry ears of corn."

An example from *Using Our Earth*, page 49, "But other young males, called steers, would not become fathers of calves and were therefore sold for meat." This would no doubt raise a question which most teachers could not answer and furthermore is this the reason why they (steers) are sold for beef?

It is hoped that the teachers who use these books will have enough knowledge of science, agriculture, and nature to prevent children gaining incorrect ideas while they are gaining many correct concepts.

ANNA C. LARSON

State Teachers College, St. Cloud, Minnesota

John K. Wright and Elizabeth T. Platt. **Aids to Geographical Research.** 343 pp. American Geographical Society Research Series No. 22. Columbia University Press, N.Y. 1947. \$4.50

This volume by the Director of the American Geographical Society and its Librarian for many years, is a completely revised edition of one by Dr. Wright published in 1923. It consists largely of conveniently classified bibliographies, lists of periodicals, atlases, gazetteers and other reference books. It is designed particularly to serve advanced students and professional workers in geography. A 38 page introduction presents a stimulating summary of the nature of geographical studies and some aids thereto; about 50 pages presents conveniently arranged bibliographies of general reference works and bibliographies. Then comes 35 pages of topical aids and 135 pages of regional aids. An appendix of 20 pages presents a classified index of about 200 American geographers as of about 1940 with statements of the special interests of each.

This handy volume is filled with material helpful to workers in advanced geography.

STEPHEN S. VISHER

Indiana University

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THE UNITED STATES TRUST TERRITORY OF THE PACIFIC ISLANDS

JOHN WESLEY COULTER

University of Cincinnati

When Uncle Sam took over the government of the islands in Micronesia formerly mandated to Japan, he began to wrestle with problems some of which are difficult to solve. Thousands of native people in hundreds of small, scattered islands demand food, shelter, medical attention and a standard of living at least as high as they enjoyed under the Japanese. They look for a type of administration in which they will play some part. At the same time Uncle Sam is concerned with security problems in these specks of land far flung from the United States, and with the type of government they shall have in the future.

Micronesia includes the Mariana, Caroline and Marshall archipelagoes, all of which with the exception of Guam were assigned to Japan under a League of Nations mandate after World War I. The Gilbert islands, also in Micronesia, are part of the British Gilbert and Ellice Islands colony. Both Guam and the Gilberts were seized by the Japanese soon after their raid on Pearl Harbor.

Toward the end of World War II various islands in Micronesia, including the Gilberts, were captured and occupied by the armed forces of the United States. The Gilbert Islands were returned to Great Britain. The former mandated islands are now "The United States Trust Territory of the Pacific Islands."

Comprising the Marianas, the Carolines (with the Palau Group, part of them), and the Marshalls, the Territory of the Pacific Islands includes at least 2,000 islands and islets, if every dot of land is included which is not submerged at high tide. If only atolls and main islands are listed the following tables give their number and area.

TABLE I
ATOLLS AND ISLANDS IN U. S. TRUST TERRITORY

	No. Atolls and Main Islands	area in sq. miles
Marianas (exc. Guam)	14	247
Western Carolines	6	185
West Central Carolines	16	90
East Central Carolines	14	61
Eastern Carolines	10	189
Marshalls	33	74
	<hr/> 93	<hr/> 846

TABLE II
OTHER ATOLLS AND ISLANDS IN MICRONESIA

Guam	1	225
Nauru and Ocean Island	2	14
Gilbert Islands	16	166
	<hr/> 19	<hr/> 405
Grand Total	112	1251

Lying between the equator and 21° north latitude and between 131° and 173° east longitude, archipelagoes and isolated islands are widely separated in an ocean area two-thirds the size of the United States.

NATURAL ENVIRONMENT

The islands of Micronesia have various origins. Many, like the Marshalls, are coral atolls less than the height of a man above sea level. The Marianas and some of the Carolines are volcanoes built up steeply from vents in the ocean floor. A few of them rise several thousand feet above sea level. Some islands have complicated structures due to the action of several earth-building agencies. All are surrounded by coral reefs. Volcanic islands intercepting the trade winds have a heavy rainfall on their windward slopes. The surfaces of the older ones have been weathered into fertile soils where taro, yams, and other native vegetables flourish. Coral atolls conform to the same well defined type, namely a roughly circular or horseshoe-shaped fringe of low islets about a central lagoon. Fragments of dead coral are found above the sea level by the action of tide, wind and wave and form land surfaces only a few feet high. Atolls support little vegetation other than coconut and

pandanus trees and, in hollows, where there is meager soil, a few coarse, edible tubers. On all inhabited islands the coconut palm furnishes the natives with food and artifacts used in their domestic economy; and copra, the dried meat of the nut, is exported.

Since Micronesia lies within the tropics the climate is characterized by a uniformly warm temperature and on most islands by considerable variation in rainfall. In general the nearer the islands

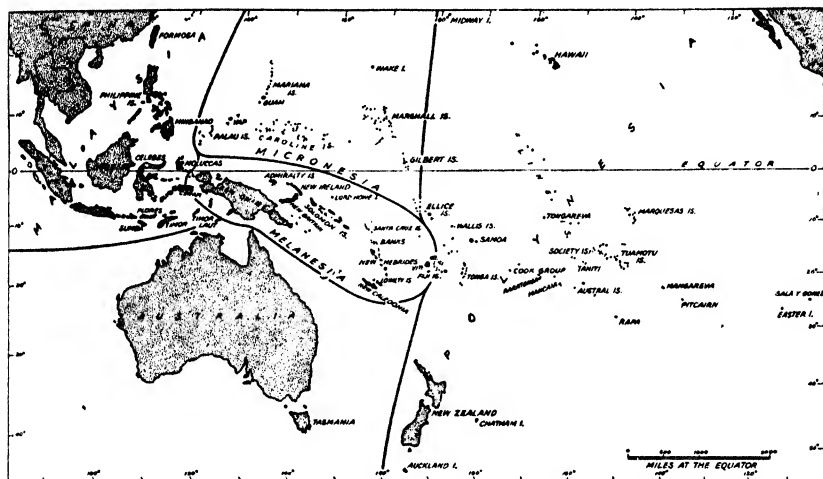


FIG. 1. Map of the Pacific islands showing Micronesia, Melanesia, and Polynesia.

are to the equator, the more uniform is the temperature. In the Marshall islands the mean monthly temperature varies no more than one or two degrees from an annual mean of about eighty-one. The daily variation, however, is from five to ten degrees. The genial climate of Micronesia is occasionally interrupted by hurricanes—terrific wind and rain storms which leave ruin in their wake. Generally only one island in a group is laid waste and the natives of those which have escaped take food to devastated islands.

The Pacific Ocean is the most important natural feature of the island home of the Micronesians. It not only tempers the climate, but it has furnished them slow but their only means of communication between islands and between island groups. Its wide, rolling expanse kept the archipelagoes isolated from the outside world for thousands of years, and allowed the natives to develop

their own lives and customs in their own way. The great isolation which the ocean imposes is partly compensated for by the abundance of fish which it generally affords these island people.

THE PEOPLE

Uncle Sam's new nephews and nieces are not a homogenous group, but represent several ethnic groups, each of which has its own language and customs which differ more or less from those of

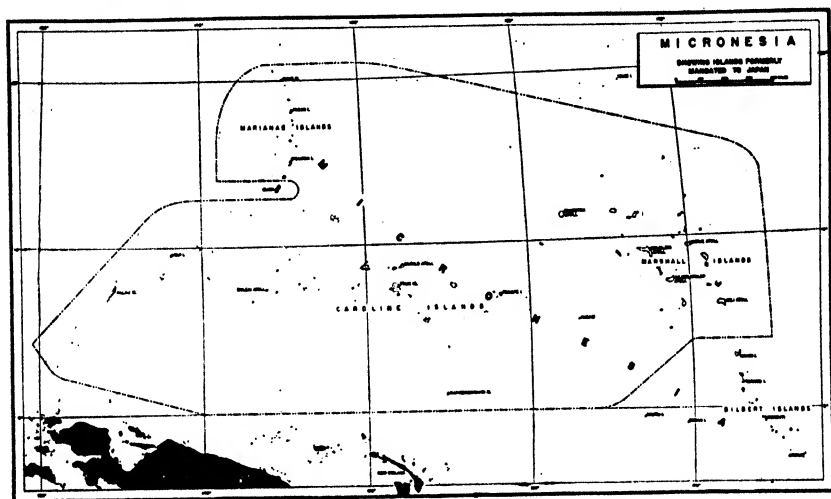


FIG. 2. The United States Trust Territory of the Pacific Islands (surrounded by broken line). These were formerly Japanese mandated islands.

the others. For easy classification they are divided into two groups: the Chamorros of the Marianas islands, and those who have been derogatorily termed the "Kanakas" who live in the Carolines and Marshalls. The people of Guam, with the exception of the recent Japanese occupation, have been under the government of the United States since the Spanish-American War. That island has now returned to its pre-war standing, the *status quo ante bellum*, as our diplomats say. About 50,000 natives live in the former mandated islands and 22,783 in Guam.

The Guamanians are higher in our idea of the civilized scale of native people than the inhabitants of the Carolines and Marshalls. Forcibly Christianized by the Spanish and governed by them for three hundred years before they came under the rule of

the United States, they understand western manners probably better than any other native people in the Pacific, except the Hawaiians and the Maoris of New Zealand. Furthermore, they have some admixture of Caucasoid (Spanish), Malayan and Mongoloid blood, the last two of which stem from their proximity to the Philippines and China.

The appearance of town and countryside in Guam before World War II reflected the different western influences to which the

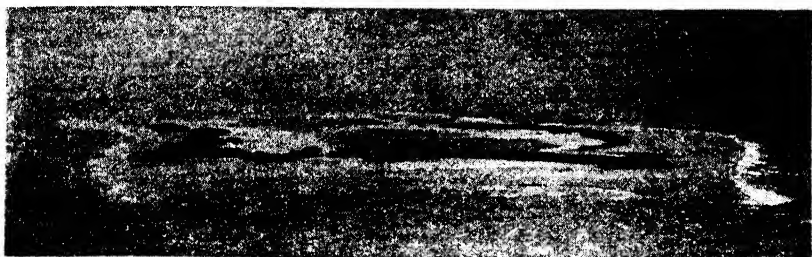


FIG. 3. A coral atoll in the Pacific. Most of Uncle Sam's new islands look something like this.

Guamanians have been subjected. Thick-walled houses with balconies where the more well-to-do town-dwellers live were Spanish in architectural design. Most of these were destroyed by shelling and will probably be rebuilt in American style. The long rule of Spain which zealously and rigorously propagated the Christian religion is also reflected in the large number of churches. Baseball grounds, beer taverns and automobiles reflect the newer influence of the United States. In remote parts of the island, native shacks constructed of bamboo and thatched with coconut leaves are homes of people less affected by foreigners.

The inhabitants of the other islands show relationships to their nearest neighbors on the south and south-east. Those of the Palau, the most westerly, have a Papuan-Malay strain possibly inherited from contacts with Halmahera to the south. The Marshallese, in the easternmost islands, show affinities with the Gilbertese south of them. The natives of islands in between apparently have varied racial relationships.

The volcanic island of Ponape in the eastern Carolines is in great contrast to the atolls. Its size and height lend themselves to a varied topography and lush tropical vegetation. The Ponapeans

are basic Micronesian stock with some European admixture. They may also have inherited a Malayan strain from Filipino exiles, many of whom were sent to this island under the old Spanish regime. They have less facial hair than the Marshallese. Ponapean women appeared to our occupying forces in a great variety of rags below the waist, many with the upper parts of their bodies bare. The primary need for clothing in their sunny climate is conceal-



FIG. 4. Thatching a native house with sugar cane leaves in American Samoa. The author was a guest in this house for a month. Photo by J. W. Coulter.

ment. They were ashamed to appear this way because of the mission taboo on nudity, but they had no other choice. Natives on their island were poor despite the richness of the island, due to exploitation by Japanese military forces. Japanese plantations of coconuts, tapioca and other foods were on the best land, leaving the poorer areas for native cultivation.

Tho of varied origins, the Micronesians in common with other native peoples of the Pacific are confronted by similar problems, and show the same psychological reactions to western governments. Buccaneers, whalers, traders, and missionaries have all had a hand in changing the indigenous cultures to a bewildering mixture with, however, a strong "primitive" base.

Various governments have had a hand in shaping their destiny. The Marianas were discovered by the Spaniards in 1521, the Carolines by the Portuguese in 1527, and the Marshalls by the Spanish navigator Saavedra in 1529. Spain bloodily conquered and oppressed the high-spirited Chamorros of the Mariana Islands, but did not take much interest in the people of the other two groups. In the latter part of the nineteenth century a new German empire was pushing into the South Seas. Germany grabbed the Marshalls as a Protectorate in 1885 and laid claim to other islands. After the Spanish-American war, when the defeated nation ceded Guam to the United States it sold the remainder of the Marianas and the Carolines to Germany. Immediately after World War I broke out in 1914, a Japanese expeditionary force took possession of the German islands.

In appraising the impact of the Japanese administration on Micronesia, it must be remembered that the Japanese officials, like those in any other large scale governmental organization, varied in quality and ability from island to island. On Yap, for example, they had a poor staff, small in number and indifferent to native customs. On Palau there was a large group of officials who were on the average of high caliber, and who took a keen interest in the development of the area. The people of Yap detested the Japanese, as they have most foreigners, whereas the Palauans greatly admired them.

The Japanese gave elementary education thru their own language. This has lessened the aptitude of the natives to speak in pure form the various indigenous languages of the islands. As a result of the efforts made to spread the language, most of the younger generation of islanders today can use Japanese in their

daily affairs. All of them use Japanese words in their own languages, terms for airplane, submarine and others, for which, of course, they have no equivalents. Tinges of Occidental civilization have been perpetuated largely by Christian missionaries from Spain, Germany and the United States who were allowed to remain in the islands after they were mandated to Japan. They have won the great majority of the people to either the Protestant or the Roman Catholic faith, altho native religions or vestiges of them are still practiced.

ECONOMIC PROBLEMS

Economic problems are fundamental in these newly acquired possessions in the far Pacific. The Japanese developed the resources of the islands to an extent far greater than is likely to be achieved under the rule of the United States. There was a flourishing sugar industry in the Marianas where thousands of acres were divided among tenant farmers who sold their cane to the controlling company. Mining bauxite for aluminum and phosphate for fertilizer were among other economic activities carried on. The copra industry was pushed to furnish coconut oil for the home market. Thousands of tons of fish, taken annually from island waters, were exported to help fill the Japanese food basket. Some 70,000 Japanese men, women, and children lived in the islands, a number considerably exceeding that of the native people. The natives benefited from the economic exploitation, for they were glad enough to earn a few yen now and then when they felt like it. Like all natives of the South Sea Islands, they prefer leisure to money. The Japanese have now been shipped home, and with them has gone the high standard of living enjoyed by the natives. The Micronesians, knowing that the United States is much more wealthy than Japan, look to us expecting that we shall do even better for them. "We did not start the war," they argue. "Why should we be made the innocent sufferers?"

The economic rehabilitation of the islands has been made difficult because of the devastation wrought by the war. Even the terrain of some of the islands has been altered by bombardments. Villages have been rebuilt, not on their old sites, for some of them could not be found, so great was the demolition. Thousands of coconut palms were torn to shreds, copra warehouses blown to pieces, and wharves destroyed.

The benefit that the natives at first missed most was the medical service furnished by the Japanese. Health and sanitation problems were the more pressing in these islands, as they are thruout the length and breadth of the Pacific. Since the end of the war the



FIG. 5. Uncle Sam's new nephews in the Marshall Islands take to our national pastime at one of the schools sponsored by the United States Navy. They make bats and balls from pandanus and coconut trees. Courtesy *The New York Times*.

Navy has done a remarkable job in greatly reducing the number of cases of yaws and other diseases. Among the medical facilities provided is a hospital ship which has been converted into a floating medical laboratory to minister to the needs of the Micronesians under naval administration. A leper hospital is planned for the island of Tinian, north of Guam.

ADMINISTRATIVE PROBLEMS

Administration problems are difficult to solve, for people in the United States have not had much experience in dealing with so called primitive people. Only on our Indian reservations have a few anthropologists and others had opportunities to learn. Situations have already arisen which demonstrate the gap between our way of thinking and primitive psychology. Some of them have to do with our attempts to introduce democratic processes among people ruled in theory by alien governments, but in fact by their own chiefs. The system of government in Pacific islands is generally referred to as indirect rule—a method by which chiefs are given a large measure of responsibility. When our Civil Affairs officers took charge on some islands, they decided to hold popular elections. The highest chiefs were, of course, always elected, tho in one case at least, the senior chief was an official who presided only on ceremonial occasions, and had no administrative authority without the concurrence of several chiefs of lower rank.

The prestige attached to wearing western clothes has baffled efforts to govern people whose ways of looking at things are so different from ours. During a visit to Fiji I noted that native clerks in the government service were not allowed to wear trousers. When we occupied the Marshall Islands, the people were so destitute of garments that the navy decided to hand out a hundred pairs of pants. Those entitled to receive them were designated as workers, widows and orphans, and others in need of covering their nakedness. Four native clerks who distributed the jeans gave, as a matter of course, a pair to each chief. Shortly afterwards a high chief appeared at army headquarters wearing the new trousers. He was immediately recognized by an officer who demanded, "Are you, the highest chief on this island, one of the needy who must have clothes? Does not most of this island belong to you?" The chief, much nettled, walked off in a huff.

Government by taboo is an instrument of administration respected by native people in the Pacific islands but which has no part in western methods of government. It has been one of the more extraordinary and powerful institutions of government and social welfare in enforcing native rules and regulations among most South Sea people. The taboo, a sacred interdiction laid upon the use of certain things and the performance of certain actions, was enforced

because of the belief of South Sea people in occult powers ascribed to both chiefs and priests thru which a dire fate befell transgressors. In some archipelagoes it was taboo to leave cast off clothing, fingernails, hair or human excreta exposed on the ground. If such were done the culprit believed that a personal enemy could cast on the offending material a wicked spell which was immediately transferred to the transgressor. Such belief in witchcraft or sorcery was, therefore, a powerful influence for sanitary conditions. Since superstitions have been to some extent dispelled, sanitation has been a pressing problem in the Pacific islands. It must be emphasized that sorcery is a native means of social control, of making people conform to generally accepted rules of conduct. And one reason why it is difficult to suppress entirely is that natives have little understanding of and, therefore, small respect for European methods of maintaining law and order with which administrators try to supplant it.

The reactions of natives of Pacific islands to circumstances and experiences entirely new to them sometimes make them appear to us to behave like children. They are unfamiliar with our civilization, our attitudes, and standards of conduct, just as we are with theirs. It is difficult to dispell the general belief that our ways of living and thinking are superior to their manners of life. Yes, they are for us, but not necessarily for them.

SECURITY PROBLEMS

The security problem in Micronesia occupies the attention of the largest number of citizens of the United States, for the only justification for controlling islands there is to defend the American continent. However, the next war, if there be another war, will probably be fought with atomic bombs attached to rockets set off thousands of miles away from their targets. They will be launched from platforms which will be the objectives of espionage prior to and during the struggle. The best platforms are battleships, the locations of which could be rapidly changed and their positions, therefore, concealed. Experiments with rockets indicate that they can be projected so far that the distance from the target may be an unimportant factor. Launching platforms in Arizona, Montana, or Alaska might serve for any potential enemy. The positions of all these islands are marked accurately on maps, so they would be easy targets for neutralization. In another war, therefore, island bases

may not be very important. However the United States could not but claim the former Japanese mandated islands, for their occupation cost us so much in human lives and financial expenditure. Moreover no other country expressed any desire to have them.

America's request for a strategic trusteeship in advance of a Pacific Peace Conference was in part to settle the indeterminate status of the islands which prevented the initiation of any economic betterment and held back the business of government. At first in some of our actions towards the inhabitants, such as duties against copra and other goods, the exchange of the yen, public funds captured, we defined the natives as enemy nationals. In certain other spheres, as in rehabilitation, we treated them as neutrals. The United States assumed full responsibility for them under provisions of the laws of war for the occupation of neutral territory. According to a decision by the Department of State in December, 1946, the natives were not enemy nationals, but "inhabitants of a mandated area," and as such entitled to consideration for war damage claims. The formal establishment of a trusteeship over the islands paved the way for the final settlement of these troublesome problems.

The President of the United States on July 3, 1947, recommended to the Eightieth Congress that it pass legislation in the form of a joint resolution authorizing him to approve the trusteeship agreement for the former Japanese Mandated Islands (to be known as the "Territory of the Pacific Islands"). The President pointed out that the terms of the agreement conform with the policy of the United States and with its obligations under the United Nations Charter, and that its terms amply provide for the political, economic, social, and educational development of the inhabitants of the trust territory, and at the same time protect the security interests of the United States. On July 14, 1947, the Senate completed the action initiated by the House of Representatives, in passing a joint resolution, "Authorizing the President to approve the trusteeship agreement for the Territory of the Pacific Islands." As mentioned above the area is now known as "The U.S. Trust Territory of the Pacific Islands."

FUTURE GOVERNMENT

The question of the future government of Micronesia involves also the status of Guam and American Samoa, both of which

the Navy has governed since the Spanish-American war. The United States is the only power in the Pacific islands which carries on naval administrations. In Guam, however, the Navy has from time to time trained the Chamarros for some measure of self-rule. There have been at irregular intervals three Guam Congresses elected by Guamanians. The first two were merely advisory; the present one, at first advisory, is now legislative by recent navy action.

Various policies in regard to training for self-rule in Guam have been representative of fluctuating policies of governments of



FIG. 6. A village scene in Micronesia. Photo by David McNeil.

South Sea islands in general. Terms of Governors are short and there has been no continuity of policy. The people of Guam have a peculiar international status for they have never been granted citizenship in the United States. Unlike the Filipinos they have shown no desire for independence, and are inclined rather to plead for recognition as American citizens. They want to be relieved of a restlessness which has developed under a system in which they feel they have had an insufficient measure of control over their own affairs, and which provided inadequate scope for abilities and powers of leadership. The situation in British Samoa may also lead to restlessness in the American sector. British Samoa has been accepted as a trusteeship under the United Nations with New Zealand as the trustee. The natives, objecting to this, lodged a for-

mal protest with the United Nations, and requested self-government. A committee of investigation appointed by the United Nations with the consent of New Zealand has recommended a large measure of self rule. This will, undoubtedly, lead to repercussions in American Samoa which comprises the eastern islands of the archipelago, altho during a visit of four months in 1937 and a shorter stay early in 1941, I found little sentiment for self-government. The Navy was furnishing the natives with a good medical service, the thing that they prized most.

Naval administration will continue in Micronesia until the President of the United States designates another agency of the Government to take over native affairs. Day to day problems are calling forth the best efforts of naval administrators, many of whom, sincerely interested in native welfare, are co-operating to the utmost. The naval governor, within the framework of his directive, will see to it that the people under his jurisdiction are given every opportunity to develop political, economic and social institutions. This has been assured in article six of the Trusteeship Agreement. On all the islands native administration is kept separate from the administration of troops and naval affairs.

Two outstanding measures have been carried out to assist the government of Micronesia. A School of Naval Administration has been established at Stanford University in California where naval officers are trained in anthropology and other subjects pertaining to native affairs in the islands. The National Research Council, with the close co-operation of the Navy, sent some forty anthropologists, geographers, and linguists to Micronesia in 1947 and 1948 to make a co-ordinated investigation, one of the major objectives of which was to gather data for the improvement of administration. An Organic Act, drafted in the Department of State, was introduced into the House of Representatives in April 1948, but it is not likely that any decisions regarding it will be made for some time.

The aspiration of native peoples for self rule is one of the factors of disquietude in the world today. It is not likely that any of them could maintain independence. They have to be educated in their own best interests and trained to look after themselves as far as possible. The situation demands from the advisors to native authorities training, knowledge of the psychology and history of the people and constant skill and attention to determine when to

interfere and when to leave well enough alone, when to hasten the development of more advanced methods of government and when to advise a slowing down of processes too rapid to be assimilated. There are no pecuniary rewards to be hoped for by those nations charged with trusteeships. A trustee is in terms used thousands of years ago his "brother's keeper."

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PARÍCUTIN

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LOCATION

Parícutin volcano, approximately 212 miles by air and 350 miles by automobile in a west-southwest direction from Mexico City, is located in the state of Michoacán. The edge of the lava flow, near the buried town of San Juan de Parangaricutiro, is twelve miles from the Uruapan highway. The road which connects the highway with the edge of the lava flow is bad. Flimsy wooden bridges just wide enough for a car span some of the mountain streams, while others are crossed by means of two planks. Most of the streams are incised ten to twenty feet beneath the surface. Several miles of the road are thru areas covered deeply with fine ash, while other miles are over sharp rocks which are hard on tires and springs. The streets of one village are just wide enough for a car and the southern exit of that village is similar to a steep stairway. At Uruapan a Mexican taxicab driver will load any number of persons that can get into a new American car, and take them to the edge of the lava flow, waiting until they return from

and westward around Guadalajara the landscape colors are gray, light green, and buff because of light rainfall, but the appearance of the region around Uruapan is dark green, the landscape color which is so familiar to people of northwestern Europe and the United States east of the Mississippi River.

THE PEOPLE

The Tarascan Indians who inhabit this region live on their corn, vegetables, and livestock. They make aguardiente, a colorless, fiery liquor from their sugar cane. They build their houses of pine lumber, and manufacture a wide variety of wooden objects ranging from furniture to chess sets. The Tarascans are short and stocky. Their black hair is straight, their eyes slant like those of a Mongolian, and their villages resemble those in wooded sections of Japan. Some of the Indians have skin that, where it is not exposed to the sun, is about as white as that of a northern European. These Indians pursue their horses about the high mountain pastures, sometimes running almost continuously for an hour at a time, yet they show very few signs of fatigue in spite of the elevation.

During the summer of 1947 the Tarascans welcomed visitors as a market for their wooden ware and guide services, but did not permit close inspection of their fields. Anyone leaving the highway was thought to be a government agent sent to examine their cattle and



FIG. 2. The trees closer to the volcano that were killed still contain good wood. The Tarascan Indians are skilled in making wooden furniture and novelties. The tourists who come to see the volcano constitute a good market.

goats for signs of aftosa, the disease that livestock-producing countries strenuously try to eradicate. All over Mexico meat animals were destroyed by the thousands while the natives, unable to understand, stood by in helpless ignorance and were kept from violence by the presence of soldiers. The writer was forced to dismantle his camp, established in a mountain pasture twelve miles above Uruapan, in spite of rain and approaching darkness. Between two and three hundred Indians, clad in attractive red and black serapes, and armed with machetes and rifles, told him to come to their village where they could watch him, or remain where he was and be killed.

Prior to the appearance of the volcano, because of very poor means of communication of any kind, this section of Michoacán was subject to very little, if any, law enforcement. Today one Indian may kill another, the body of the dead man will lie where he fell until darkness, at which time members of his village will carry him away, and the perpetrator of the deed may continue his pursuits unmolested. It must not be concluded from this that the Tarascans in this region are vicious or hostile. They are really friendly and generous, but conduct their affairs in the manner that their primitive lives have proved best for survival.

THE VOLCANO

Parícutin has built up a cone, the top of which is about 1800 feet higher than the floor of the valley in which it first appeared in February, 1943. The cone is not circular, but somewhat elliptical, with two sides higher and a sag in the middle. The crater has a central vent and two side vents, all of which sometimes erupt simultaneously. The surface of the cone is covered with volcanic sand, with here and there blocks of lava almost hidden in the loose material. The angle of slope is steep and the sand slides at the least disturbance. Ascent must be made by using both hands and feet, following a zigzag course. The only ways to descend are to double up and slide down on one's back, or wrap the arms around the head and roll. Both methods are uncomfortable and dangerous, especially if one strikes a sharp rock. The writer's companion rolled down that slope for at least 1,000 feet and survived, but such experiences rarely happen.

During violent eruptions the sides of the cone shake and heave and the sand slides. Prior to an eruption the surface trembles con-

stantly and there is a sound similar to that given off by a boiler when the steam pressure is about to lift the safety valve.

Hardened lava almost surrounds the base of the cone, a groove-shaped depression between it and the sloping sand surface. This groove, about twenty feet wide and ten or fifteen feet deep, appears to have been formed by the immense amount of stones of all sizes from that of a pea to that of a piano, that hurtles down the volcano with terrific speed during heavy eruptions. Many of these stones are partially rounded, perhaps their shape being caused by

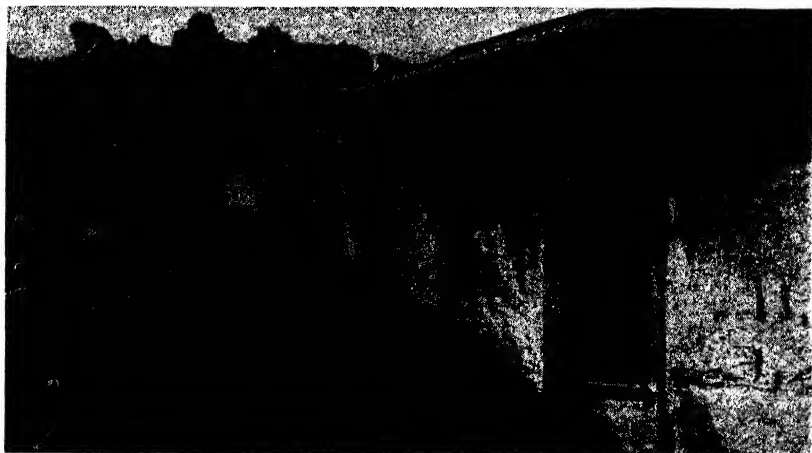


FIG. 3. Lava from Parícutin rolling over the town of San Juan de Parangaricutiro, Michoacán.

the whirling motion while in a plastic condition in the air, and the pounding they get as they strike the side of the cone and bounce on their way to the bottom.

On the northeast and southwest sides of the cone lava is pushing out continuously and, beneath the broken crust that rides upon it, the molten rock looks like a mass of red-hot taffy. At one end of a graben where the plastic material was squeezing out it looked like a huge red ball or bubble, until the surface cooled and the hardened rock began to crack off. Usually such a situation produces a violent explosion, after which the viscous lava may move fifty or sixty feet a minute. After a few hours, or days, the speed slackens to thirty or forty feet an hour. Close to the cone the temperature of the molten rock is about 1900° Fahrenheit. At a distance of half a mile it usually registers about 1700°. However,

new lava may burst up thru old flows at a distance of half a mile or more from the cone.

The former lookout hill that was used by tourists in 1946 has been completely surrounded by lava, preventing approach by the horses used for the ride from the edge of the lava flow at San Juan de Parangaricutiro. The present lookout hill is two or three miles from the base of the cone. Both hills are covered with a nine-foot layer of fine dust. At the base of the hills, on the side next to the volcano, the lava stands up like a wall, thirty or forty feet high. There are repeated explosions in this wall, each outburst announced by a blast of hot gas and dust, followed by rocks which crash to the bottom. All of the area between the lookout and the volcano is covered with merged tongues of moving lava, the surface of which is far from level. At frequent intervals there are deep grabens where the molten material has drained away, causing the solid mass to collapse. Decent into and the climb out of these depressions is very dangerous because many of the huge blocks of rock are delicately balanced and crash downwards at the touch of a hand or foot. All of the rocks are hot, those in some of the grabens too hot to touch with the hand. The rocks that make up the lava, for the most part, resemble coke material, hard, glassy, with a grayish, sponge-like appearance. Some of the material is solid, dense, porphyritic, and dark gray in color. There are also pieces of red material almost like burned clay, but full of gas holes.

At first glance when one is crossing the great heaps of debris, the rocks seem to be standing still. If he stops to rest, the rocks on which he stands, tilt; they sink a little, and move forward. Sometimes, when stepped upon the rocks sink several feet while others fall in to catch the legs unless the individual is quick enough to shove other rocks into crevices to hold the big ones back. During the afternoon, when thundershowers are prevalent, large columns of steam shoot skyward whenever a heavy fall of rain strikes the hotter portions of the lava beds. In addition to the heat remaining in the hardened portions, beneath much of the area is the still plastic rock which instantly turns the rainwater into vapor. For one who ventures across the lava field, in addition to the danger of being caught in the collapsing rocks, crushed by falling rocks as he climbs into and out of grabens, or scalded by live steam during a heavy shower, there is always the promise of a violent explosion from below.

AN ERUPTION

Parícutin erupts frequently, but there is little regularity in the time between eruptions. A year ago last summer, it erupted violently all one night. The writer's camp on the side of a mountain twelve miles away was shaken repeatedly. The following day the only sign of activity was a cloud of smoke welling up from the crater. At that time two students climbed to the crater and took pictures, none of which were very clear because of the smoke. Last



FIG. 4. The lava from Parícutin now covers more than sixteen square miles of land. Eruptions may occur every few minutes or may be separated by many hours. The lava still pushes out from the northeast and southwest sides of the cone. The large volume of material that is blown from the crater is solidified before it strikes the earth.

August the volcano remained quiet during the three or four hours necessary to cross the lava field. It was not until the author was about 500 feet from the top of the cone that another eruption occurred, an exceptionally heavy one, no doubt due to the hardening of the crust in the crater and the accumulation of immense pressure.

The eruption was announced by a deep rumble from beneath the quaking surface of the cone, the rumble closely followed by a booming explosion. The sound is not like that of a cannon, but prolonged as tho the discharge comes from great depths. An enormous mass of smoke, cinders, and rocks, punctured by great gashes

of fire or bright, red-hot lava, rolled over the edge of the crater. Much rock material was blown high into the air, some of it exploding during the ascent. It takes some of those rocks eleven seconds to fall. For a few seconds after the eruption there was stillness. Then came an increasing volume of sound like a great wall of water rushing down a canyon. Twice during that short period the sides of the cone heaved and threw the writer far down the slope with



FIG. 5. The hills close to the cone are covered with a layer of fine dust more than nine feet thick. Surface flow from heavy rains cuts miniature canyons in this dust, many of them deep and narrow with perpendicular sidewalls. Where the dust is only a few inches deep, the land produces better crops than before the volcano began its existence in February, 1943.

each movement. Sand rolled over him and all around, and then came the rocks. Some of them were large and whirled and whistled as they flashed by. Others, small ones, were like a hail of whizzing bullets. To these sounds was added the heavy thump, thump, of rocks falling from high in the air. Some of those rocks disappeared in the sand. Others skipped as tho over the surface of water, and shot by with a shrill whine.

When all the rocks had finished their movement down to the groove at the base of the cone, the silence was oppressive. Clouds of smoke rolled slowly overhead. Everywhere was deep twilight. The volcano, extending up into that dim light was magnificent. The musical tinkle of the slowly moving lava in the background sounded like thousands of little glass bells.

ECONOMIC EFFECTS

Parícutin has destroyed San Juan de Parangaricutiro and the village of Parícutin. It has covered up many fields that formerly provided means of subsistence for the people inhabiting the valley. The primary effect was disaster and despair. The result has proved to be somewhat of a blessing. Farther back from the volcano a large area that was covered with a few inches of fine ashes is now producing better crops than ever before. Much of the timber that appeared dead has put out leaves and is apparently as good as ever. The dead trees, closer to the volcano, still contain good wood. Many of the Tarascans are skilled in making lacquered wooden ware, wooden novelties and furniture. The crowds of tourists that come to see the volcano constitute a good market. At the point where the tourists have to use horses to get to the lookout, little shacks containing food and drink counters provide a good income for people who, a short time ago, saw their lands and homes disappear beneath masses of cinders and creeping rocks. The Indians who have horses rent them to the tourists and act as guides. If an Indian has only one horse he can make at least two round trips to the lookout, daily. The charge per trip is fifteen pesos. If he has several horses, his income is considerable. When the lava-covered land was an area of corn and sugar cane, his income, at the most, would have averaged about three pesos a day.

In Uruapan, which has long been a tourist town, noted for its lacquer ware, its aguardiente de caña, and its beautiful scenery, all business has increased, from hotels, taxicabs, and shops, to the individual workers. Many people have more money than they ever had before, and they work less for it. If that twelve miles of road out to the edge of the lava flow did not remain in a dangerous condition, and the small turn-off sign on the main highway were not kept unreadable, the tourists could drive to the edge of the lava flow themselves, and spend their time in far more comfortable hotels in Morelia.

THE STORY OF FRUIT

ADELAIDE BLOUCH

Hayes School, Lakewood, Ohio

The Fifth Graders were reading in their geography books about the fruit migrants in California. Our librarian read to the class from *Blue Willow*, a charming story by Doris Gates, about an itinerant American family. The children were interested in this way of making a living and so it was suggested that they try to make up stories about *Following the Fruit*. The boys and girls soon discovered that they did not know enough about the kinds of work involved and the times of harvesting the different crops. The librarian tried to help them but it was quite a problem.

Then it was suggested that they might write to other boys and girls for the information. The children had been collecting labels from fruits and vegetables packed in the West so each one chose a different place. They talked over the kinds of information for which they would ask in writing their letters. Each letter was addressed to a fifth grade class in care of the Board of Education of the city selected.

About one-half of the class received answers. As might be expected, the replies varied greatly in value. Along with the letters some classes sent maps, market reports, and other published information secured from Agricultural Bureaus and Chambers of Commerce. We appreciated all of the material sent to us and have edited some of it so that we may have it in a more usable form.

FROM WILLOW GLEN SCHOOL, SAN JOSE 10, CALIFORNIA,
TO MARYLYN

"Some children in our room are writing stories about fruits and vegetables. We have some labels we are sending you for your project. Our class is also sending you some dried fruits like prunes, figs, apricots, cherries, and several others. We hope you are going to be pleased with these things. We also have some information from the Chamber of Commerce in San Jose. We would like to have some information about the state of Ohio."

Climate. "You wanted to know about the climate of California. Here is some information about it.

"California has most every kind of climate. We have a lot of rain in the northwest part. It's very dry in the southeast part, the

Mohave and Colorado deserts. It's cold when it snows in the high Sierra Nevada Mountains. The hottest place in the United States is Death Valley. The temperature is 134 degrees above zero. The Central Valley is sometimes over 100 degrees above zero at midday in the summer. Along the coast, it is cool in summer and warm in the winter.

"Here is some information about San Jose climate. Our winters are medium cold with one month of quite cold weather, as low as 31 degrees and 32 degrees above zero. In the summers, it is warm but not too hot. The highest temperature in the summer is about 100 degrees, with a few days as high as 106 degrees. In the rainy season, the months are December, January, and February. In the summer there is no rain."

Canning. "Canning is the preservation of foods in sealed containers by sterilization by heat. In California, the first canneries were established in 1859-1860. Canned fruits are marketed either under the label of the cannery or those of wholesalers or large retailers.

"The fruit is transported from the ranches by truck or train directly to the canneries. Fruit for canning is usually gathered when firm ripe, not quite ripe enough for table use, but full size and good flavor.

"One of the most important factors in determining the quality of canned fruits is careful grading. Most fruits are graded for size by machine before peeling or halving. The fruit is sorted by women at the sorting table; if necessary it is trimmed by hand.

"The first step is peeling of fruits for canning. Peaches are lye peeled after going through an automatic pitting machine. Apricots are halved and pitted by hand. Satisfactory mechanical peelers are now available for pears.

"From the grading machine the fruit passes by means of belts to the canning tables where the women can the fruit according to size and grade. The fruit is then carefully inspected and weighed before the can is automatically filled with syrup. The filled cans are carried by automatic conveyors from the syruping machines to the exhaust room where they are heated in live steam at a temperature of 190 to 212 degrees F. from 5 to 8 minutes. This expels the air from the fruit; also that on cooling, the can will show a good vacuum. The cans are marked as to grade and variety. From the exhaust box the cans pass directly to the double-seaming machine. This auto-

matically places the caps on the cans and seals them at the rate of from 25 to 150 cans a minute. The fruit is then sterilized or processed. This is the most important stage in the canning process. It should be thorough enough to cook the fruit but not to cook it too soft. Immediately after processing the canned fruit should be cooled to stop the fruit from cooking. As the cans are placed on trays after cooling they are stored on the cooling floor overnight. The cans are stored several weeks before marketing in order that faulty cans may be detected. Canned fruits are labeled by automatic machines. The labeled cans are then packed at once into heavy pasteboard cases and are ready for distribution."

Care of Orchards. "Orchards are irrigated every once in a while. The orchard owners dig irrigation ditches and the water comes into the ditches from the wells. If they have no wells they use hose. Sometimes they put paint on the tree trunks to tell the men on the tractors the direction to go when they plow.

"If fruit trees get too much small fruit they thin it so larger fruit will grow there. In order to thin it they cut off some of the small fruit."

How Prunes Are Picked. "The first thing they do in picking prunes is to shake the trees. The shaker takes a long pole with a hook in the end of it and shakes the prunes off the trees. The prunes fall to the ground and the prune pickers get down on their knees and pick them up with their hands. They have pails or buckets to put the prunes in. When they fill the buckets, they take them down to the ends of the lines and dump them into boxes. When they get the boxes filled, the pickers start other boxes. The people who pick get paid a certain amount of money for each box."

Cherries and Other Fruits of Santa Clara County. "Cherries ripen in the latter part of May and the harvest ends in the latter part of June. After cherries there are apricots, peaches, pears, and prunes. Prunes are sometimes dried and the harvest ends in September.

"One-third of the cherries in Santa Clara Valley are sent to the eastern markets fresh. These cherries are packed by hand in Santa Clara Valley. Then they are put in refrigerator cars, ice cold, and shipped back east.

"We thought it might be interesting for you to know that the largest peach orchard in the world is in Merced, California. Del Monte Packing Corporation owns it."

The Story of Canning Pears and Fruit Cocktail. "The first step in canning pears is to store them away in a warehouse until they are ripe enough for canning. Then when they are ripe enough they go thru a machine which cuts their tops and bottoms off. Then they come to another machine which slices them in half and takes the cores out. After the cores are taken out, they are washed and sorted. Then they come down a sort of slide and fall into the cans. Next they slide along a sort of belt and go around a machine where the tops are stamped on the cans. Next they go into a boiler. The boiler is as big as a car and heated hotter than you can imagine. When they are cooked, they are laid sideways and have their labels rolled on and are ready for shipping.

"And as for fruit cocktail, it is the same except there are different fruits in it besides pears and approximately three cherries in each can. So that is the story of canning pears and fruit cocktail."

FROM SANTA ANA, CALIFORNIA, TO CAROLE

"Our teacher just read us your letter inquiring about oranges. Over fifty per cent of all the oranges come from California. Santa Ana is in Orange County so we see a lot of orange trees. The Treesweet Company has grown a lot in the past year. There are a lot of packing houses around here. Most of the oranges are sold fresh.

"We grow English walnuts, grapes, and prunes, too. We don't grow grapefruit. Our grapefruit comes from Arizona."

FROM JANE ADDAMS SCHOOL, FRESNO, CALIFORNIA, TO NANCY

"We received your letter and thought it was very interesting. Fresno is the heart of the raisin center. The grapes are on vines until they get a certain sugar content of 18 or 20 per cent. The grapes are then picked and put on trays where the sun dries them. After being dried the grapes are called raisins. The raisins are put into boxes, hauled to the packing house where they are put into a steamer. The steamer steams them and cleans them. Then they are packed in 1 to 25 pound containers. After that they are sent to the market where the raisins are sold."

FROM RIVERBANK SCHOOL, RIVERBANK, CALIFORNIA, TO BILLIE

"Our teacher read your letter to us this morning. We were very interested in it.

"We have our fruit tramps here. Many families move from place to place working in the fruit and vegetable crops. There are many large apricot and peach orchards nearby. The principal vegetable is tomato. Walnuts and almonds are grown near our city too.

"Most of ours is either canned or dried. We have large drying sheds here. During the summer a great many children over twelve years of age work in these sheds. Riverbank has a very large cannery and we can all kinds of fruit and vegetables here.

"We hope to hear from you again and would like to hear about Ohio, altho we do not study about other states until the sixth grade. We spend one year studying California."

FROM COMMODORE SLOAT SCHOOL, SAN FRANCISCO, CALIFORNIA,
TO GORDON

"We do not raise very many fruits around the city of San Francisco. Most of the cherries, figs, apples, grapes, peaches, pears, plums, are grown in Santa Clara Valley. The Santa Clara Valley is known as 'The Prune Belt of the World' and Healsburg, 'The Buckle of the Prune Belt.' So many peaches are grown in the Sacramento Valley that this valley is sometimes called the 'Peach Bowl of the West.' Walnuts and almonds are raised also. Most varieties of berries are raised near San Francisco and we enjoy eating fresh berries all summer.

"San Francisco has a few canneries and packing houses which can and pack the fruit raised in the valleys. Most of the fruit is canned, but some is sold fresh. Del Monte peaches are packed by the California Packing Association.

"San Francisco County and the bay region raise many vegetables, some of which are cabbage, artichokes, carrots, lettuce, cauliflower, spinach and chard."

FROM MADISON SCHOOL, SAN FRANCISCO, CALIFORNIA, TO BRYAN

"In your letter you asked about corn growing near San Francisco. Corn is grown in some places near San Francisco, but fruits and vegetables are the main crops here. Our irrigated fertile farms are smaller than those of the middle west. Choice fruits are grown in our Santa Clara and San Joaquin Valley3."

FROM ROOSEVELT SCHOOL, YAKIMA, WASHINGTON, TO MARGARET

"Yes, apples are raised here in the Yakima Valley. In fact some of them are raised right in the city. We have quite a few apple

orchards within the city limits. One can drive for hours and see almost nothing but fruit orchards.

"The Yakima Valley leads the world in the production of apples. Last year of the fifty-eight thousand carloads of fresh fruits shipped from Yakima about twelve thousand were apples. Some of these were Delicious, Winesaps, Jonathans, Arkansas Blacks, and Rome Beauties.

"Other fruits grown here are cherries, peaches, apricots, prunes, plums, raspberries, and strawberries. Most of the fruits are shipped fresh, but some are canned and others made into juice.

"There are many vegetables grown here. Some of these are asparagus, lima beans, beets, celery, carrots, cucumbers, corn, onions, and many others.

"As you probably know, in order to grow any fruits or vegetables here we must irrigate. Irrigation has turned the Yakima Valley from a sagebrush country into a thriving community.

"What crops do you raise in your community?"

FROM FRUIT VALLEY SCHOOL, VANCOUVER, WASHINGTON, TO JOY

"We have many different kinds of fruits such as pears, peaches, apples, prunes, cherries, and apricots. Strawberries are the first fruit of the season. They are processed for quick freezing. Pears and prunes are the principal fruits canned at the Washington Cannery Cooperative in Vancouver.

"Pears come in from all points of the state. They are stored in cold storage and later sorted for them to be put in a ripening room for three days. When the pears are ready for canning they are put thru the peeling machine which peels, halves, and cores them. Then they are washed and inspected for spots, then trimmed. The fruit is then put on belts and brought to canners where they are run thru the syruper, then thru the capper, and then put thru the cooler for nine minutes. They are put in the cooker for thirty minutes. Next they go on an escalator which takes them to the warehouse. There they are cased and labeled for consumers.

"Washington Cannery labels, Best West, West Beak, and many more names are pasted on them. The mother of one of our classmates works at the Washington Canneries. She kindly gave us information about the fruit and some labels which we are sending to show you the kinds of fruit and their brands.

"We also raise thousands of pounds of walnuts and filberts. When the nuts fall from the trees we pick them up, sack them and

take them to a dryer. They are dried for about two weeks. They are then sorted and sacked and taken to the stores to be sold. They sell for about twenty-five to forty-five cents a pound. They are very good and we like them to eat in cakes, salads, and candy.

"We hope this has answered your questions. May we hear from you again?"

"Two other girls are writing about fruits and nuts and poultry farms. I will tell you a little about the dairy farms. There are many dairy farms here. They have a hundred cows or more because they are near two large cities.

"Out in a dairy farm they scrub their barn floors. They have electric milking machines which have to be watched carefully. The milk is strained into large cans which are kept covered. Then the milk is taken to the milk house, it is run thru a cooler and then bottled. Then special milk wagons take it to customers and stores. Are you near any dairy farms?"

FROM FRUIT VALLEY SCHOOL, VANCOUVER, WASHINGTON,
TO BARBARA

"We are very thrilled to hear from you in Ohio. I am going to write about poultry farms. We have many of them because we have two large cities, Vancouver and Portland, where the people need many eggs and chickens.

"Some of the chicken farms have eight and ten thousand birds. There are turkey farms that have fifteen and twenty thousand birds. It takes many men to feed and care for these flocks. It also takes hundreds of pounds of feed and grain. We surely like the eggs and meat and are glad we can buy these foods. Do you have poultry farms near your city?"

FROM COLUMBIA SCHOOL, WENATCHEE, WASHINGTON, TO BILL

"Our class received your interesting letter and would be happy to tell you a little about Wenatchee and our chief industry which is the raising of apples.

"Wenatchee is located on the Columbia River in about the center of the state. Its population is 12,800.

"In the raising of apples we have many problems to contend with. The principal one is the coddling moth or apple worm. We also have to fight scale, aphids, mite, apple drop, etc. All of which we combat with various spray programs. During the late winter

months we prune our apple trees. This is to let sunshine in and allow apples to color better, also to keep the trees from growing too tall and bushy. Later in the spring many ranchers use some form of pollenization to insure a better and more uniform crop. Some use hand methods and some rent bees. Our valley is very beautiful at this time of year. After the blossoms fall and the little apples form, we then have to thin some of the small apples off so the remaining ones will be able to get good size and color.

"Our valley lies east of the Cascade range and, unlike the coast, we get very little rain so we have to depend upon irrigation for water. We have several canal systems on either side of the valley which supply us with the much-needed water.

"Along thru the summer the work consists of spraying and irrigating. As it nears picking time, the apples are getting large and the limbs of the trees have to be propped up with wooden props to help carry the weight. Our apple harvest starts late in September and lasts thru October. The apples are hauled to huge packing sheds or cold storage warehouses where they are washed, wiped, sorted, and graded, and then packed for storage or shipment to market.

"In addition to apples, we grow lots of soft fruit such as cherries, peaches, pears, prunes, and apricots."

"We want to tell you about Washington State's Apple Blossom Festival. It is held each year when the apple trees are in full bloom. From the senior class in the high school a queen and two princesses are chosen for their high grades and popularity. In addition one princess is sent from each district in North Central Washington to represent her own particular community.

"There is a big parade down the main street in the morning. Bands from many places march in the parade. They play gay music as they go by. Floats are entered from different stores, towns, and communities in Washington. On one float the queen, the two princesses, and two flower girls ride. Other floats are decorated to symbolize various things. Cars are also decorated.

"After the parade a pageant is held in the big park below the Court House. A big platform is built. Above the platform seats are built for the queen and princesses to sit on. The crowning of the queen is also held there. In front of the platform sits a band. The story of apples is told in music and dance. At night fireworks are set off in the park. There is also a carnival.

"Do you have any celebrations where you live?"

A number of letters received, asked for information about Ohio, particularly about crops, weather, and kinds of work. To get material to send with their replies, the boys and girls wrote to the Chamber of Commerce, Agricultural Experiment Station, United States Weather Bureau, and various Cleveland industries. We hope that the classes which received our information, enjoyed it as much as we have enjoyed their offerings.

FERTILIZATION: ROUTE TO A NEW CONTINENT

EARL B. SHAW

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A few centuries ago Christopher Columbus made a long voyage looking for a new route to the riches of the East Indies. Instead he discovered a continent, a land which has added enormously to the world's food supply. Recently, what amounts to the discovery of a new continent may result from widespread use of modern crop fertilization formulae. In short with proper application of nitrogen, phosphorus and potash, crop production can be doubled and the continent of Columbus can become equivalent to two as a producer of food.

One of the most arable sections of North America is the Mid-West Corn Belt which waited until the middle of the last century before starting its great contribution towards American food supply. Commercial farming developed slowly but by the decade of the 1890's, the grain producing qualities of this great farming region became known thruout the world.

In the early 1900's, Professor Cyril G. Hopkins of the University of Illinois, believing that limits of crop production were still far above the yields at that time, discovered that Corn Belt soils lack sufficient phosphorus for a maximum clover harvest. As a result, he developed a plan to increase crop yields and to maintain soil fertility—a plan which included (1) the application of phosphorus to aid clover growth and (2) the growth of clover every fourth year in a crop rotation cycle.

Hopkins was one of the first to advocate the well known four year rotation of corn, corn, oats and clover. The cycle worked well, especially when a heavy phosphate application was made at the time oats were seeded as a nurse crop for clover. If land became

acid, lime was added to correct soil acidity and to permit phosphate and clover to react most efficiently. The lime-phosphate-clover program and the four year and similar rotation cycles high-lighted Corn Belt crop production for many years. Hopkins became famous; students from his classes carried his theories to other Corn Belt universities; farm papers and extension bulletins encouraged the Hopkins Plan. It was regarded as the answer to practically all major crop production problems of the Mid-West.

MODERN FERTILIZATION PROGRAMS

A few years ago, certain agronomists, who believed the Hopkins Plan good, but not the final answer to increased crop yields, discovered that larger production will result if nitrogen is added to the original Hopkins Plan. Increases from a phosphorus-nitrogen fertilization are almost unbelievable. The use of this combination with oats may be cited as an illustration.

Corn, the principal grain crop of the Mid-West, is usually planted for two or three years on the same field. Then the land may be seeded to oats or other small grain, and almost always clover is planted with it at the same time. Oats shades the clover from the hot sun until the legume gets well rooted and able to make its way alone at the time oats are cut.

Clovers have the ability to take nitrogen from the air and fix that soil builder in the soil, but the task is not started until oats are harvested. Consequently oats, which in recent years has averaged only about thirty bushel an acre in Iowa, gets no help from the crop whose early growth it protects. The old recommendation of applying phosphorus to the oats at seeding time, to help the clover, never did help the nurse crop appreciably because the major deficiency affecting oats was nitrogen. Now when phosphorus and nitrogen are both applied, the oats yield may be more than doubled. One authority sums it up this way.¹ "To help the yield of oats, simply add as many pounds of nitrogen as you want to increase the yield of grain in bushels per acre. One pound of nitrogen adds one extra bushel of oats if that nitrogen is applied in combination with phosphorus, but only if it is applied in combination with phosphorus. Basically the same fertilizing program will hold true with wheat or barley that holds true for oats. The only difference is that because wheat is twice as heavy as oats, it takes approxi-

¹ Personal letter from Garst and Thomas Hybrid Corn Company, Coon Rapids, Iowa, June 16, 1947.

mately two pounds of nitrogen to increase the yield of wheat one bushel, and approximately a pound and a half for an increase of each bushel of barley."

In general, the increases available thru using nitrogen with phosphorus when seeding oats, wheat and barley are also available if such fertilizers are applied to the land at the time of corn seeding. Of course corn yields received a big boost within the last decade in response to the development and widespread use of hybrid seed corn. Largely as a result of this progressive step, corn averages have jumped several bushels an acre within the last few years. But farmers are not satisfied with this progress. Dr. W. L. Burlison, head of agronomy at the University of Illinois, states "The average corn yield here in the heart of the Corn Belt is about fifty bushels an acre. Why is it not more than fifty? The first factor is nitrogen. Put in the nitrogen and you get seventy-five. Add phosphorus and you get ninety. Put in potash also and you get one hundred. When we add nitrogen, phosphorus and potassium for thickly planted high-yielding hybrid corn to normally 90 bushel corn land, the sky is the limit. Under favorable weather conditions yields have already jumped to 150 and more bushels. Our better farmers here in the Corn Belt do not talk any more about seventy-bushel corn. They are shooting at a hundred and fifty bushels and more."

The revolution in crop production brought about by increased use of chemical fertilizers is not confined to the Corn Belt. J. Sidney Cates, writing in the June, 1947 *Country Gentleman*, "War Lessons With Fertilizers" and in a personal letter to the author says that "Corn yields in Southern United States rise to Corn Belt heights when thick-planted hybrid corn is grown in fields treated with nitrogen. In one North Carolina experiment, ten dollars worth of nitrogen pushed up corn yield from 19 bushels an acre without fertilization to 107 bushels with it. Nitrogen not only feeds the crop, but also insures against or cuts down drought damage. Without heavy nitrogen application, a severe drought, coming just as the corn is in silk, has a devastating effect. But put out as much as sixty pounds of nitrogen to the acre, and when a drought does come the corn leaves do not fire. They may curl and look pretty sick, but they stay dark green and alive; and it's in a drought year that the biggest difference shows between no nitrogen and heavy nitrogen."

Mr. Cates also says that "An increase in nitrogen and potash on tobacco and cotton soils with a relative lessening of phosphorus provides increased harvests in the South; and North Carolina soy bean growers have discovered that doubling or trebling potash applications will encourage a big boost in yields."

It should also be added that many people have thought only of the poor lands of the United States when considering fertilization potential. The nation's farmers are now beginning to realize that it may be even more profitable to use fertilizer on the rich lands than on the poorly cropped, eroded and so-called worn out lands of the country.

Much is yet to be learned, however, concerning the best methods of applying nitrogen and other commercial fertilizing materials, and as to what are optimum amounts to be used for highest yields. For example in 1946 at the University of Illinois,² corn production tests were made using nitrogen in amounts of 20-40-60-80 pounds of elemental nitrogen per acre and of application by broadcast before plowing, at planting time, at second cultivation, at third cultivation; side dressing at planting time, at second cultivation, and at third cultivation. The fields with the 40 pounds elemental nitrogen applied as a side dressing at the second and third cultivation produced at the rate of 104 bushels of corn per acre, while the field with an application of 80 pounds broadcast at second cultivation and the field with a similar application at planting time only yielded 89 bushels of corn per acre.

Again, old tried and proven practices such as the establishment and maintenance of good drainage; the judicious utilization and careful conservation of legumes, crop residues and animal manures; contour farming; terracing; grass waterways; correction of soil acidity by use of limestone; cropping systems with proper balance between intertilled, small grain and grass-legume sod crops—none of these should be abandoned because of exciting results obtained by the addition of commercial nitrogen, phosphorus and potash. Commercial fertilizers such as these should supplement the time-tested crop practices rather than replace them.

FERTILIZER RESOURCES OF THE UNITED STATES

One of the main problems facing the farmers of the nation is to obtain, cheaply, enough commercial fertilizer to raise food pro-

² AGI150, Urbana Soil Experiment Field Studies, 1888-1946, p. 6, Table 10.

duction to the status of a new continental discovery. The United States supply of phosphorus is large, and prior to the war this country produced more phosphoric acid and phosphate rock than any other country in the world. In four western states, Idaho, Montana, Utah and Wyoming, billions of tons of phosphate rock are available and five states of the Southeast, Florida, Tennessee, Arkansas, South Carolina and Kentucky possess phosphate resources probably less than ten per cent of those in the West. Because the deposits of the Southeast lie closer to the nation's greatest farming country they account for well over three-fourths of our annual production. Of nearly five million tons of phosphate rock mined in 1941, only about 300,000 tons were produced from the far greater resources of the four western states.

Large supplies of potash are available in the United States, but the greatest deposits also lie far from the market. Two major areas supplied the bulk of the 1941 production. These are the Permian Basin of the Carlsbad section of New Mexico and the brines of Searles Lake, California. Sub-surface brines of the Salduro Marsh near Wendover, Utah contribute slightly to United States production. In 1942 the total national production approximated 617,000 tons of K_2O in the form of refined salts, a great increase over the 1930's 61,000 tons when most of our potash came from Stassfurt, Germany and Alsace, France.³

Cheaply available natural occurring nitrate reserves are limited in the United States, but nitrogen fixation plants offer adequate substitute where low cost power is available. However, plants with cheap power are not in abundance at the present time and here is one of the greatest drawbacks to the utilization of the "newly discovered continent."

The present nitrogen fixation capacity of the United States is only about 700,000 tons, and of this amount, something like 70,000 tons are being exported under the rehabilitation program. To show how inadequate the supply of ammonium nitrate is, consider the following excerpt from a letter written by Garst and Thomas Hybrid Corn Company, Coon Rapids, Iowa. "There are about 200,000 farmers in Iowa. Each could profitably use the nitrogen equivalent of five tons of ammonium nitrate on his farm annually. This means that Iowa farmers could profit by using the nitrogen equivalent of something like a million tons of ammonium nitrate. They would, of course, have to use far more phosphorus and potash than they are

³ Mineral Industries, 1941, McGraw-Hill Publishing Company.

now using to balance it—but they could use something like that much nitrogen.”

“As against a potential demand for a million tons. Iowa was able to procure only about 7,000 tons last year (1946) and will only be able to acquire about 12,000 tons next year (1948). In other words only one farmer in every twenty, or thereabouts, could have one ton if it were equitably distributed, and it is not.”

“The Iowa situation is only representative of the national picture. Nebraska farmers know even more about the use of ammonium nitrate than those in Iowa. Kansas and Missouri will know as much about it soon. In all four states the demand will exceed the supply for some time. In the whole nation this will probably be true.”

Europe is also badly in need of nitrogen. In speaking of Europe's need, the Krug report states: “Altho European production of nitrogen is almost back to pre-war levels, total production abroad is still below capacity, owing chiefly to an insufficiency of coal and electric power.” The report suggests “giving high priority to coal and industrial equipment shipments for increased nitrogen fertilizer production in Europe.” Another item of the report is also of interest to American farmers seeking increased nitrogen supplies. “Considering transportation and cost, it appears desirable to export nitrogen for increased food production abroad rather than to continue to ship the much greater tonnage of equivalent food from the United States.”*

Some say that nitrogen fertilizers are as easily available as the air we breathe, the water we drink, and the gas our coal fields can produce, but it must be stressed that nitrogen fixation plants are very expensive. An economical sized operating unit may cost twenty or thirty million dollars and many such units are needed for United States production.

The new continent has been discovered but its blessings wait upon supplies of chemical fertilizer for its own use and that of other continents. Yield estimates made cooperatively by the United States Department of Agriculture and the Land Grant Colleges show that with proper land use practices food production can be increased by 1950 as follows:[†] corn 31 per cent; hay 28 per cent;

*Krug Report, *New York Times*, October 19, 1947.

†Statistics taken from an address by Robert M. Salter, Chief Bureau of Plant Industry, Soils and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture, at Boston, Mass., Dec. 30, 1946.

wheat 18 per cent; rice 13 per cent; peanuts 20 per cent; sugar beets 17 per cent; potatoes 22 per cent and sweet potatoes 31 per cent. And these probably are not ceiling figures for the future. Many believe that fully fertilized, the agricultural production can easily be doubled. The sooner we get to building the nitrogen plants either by private industry or government enterprise the sooner the new continental discovery will really come into its own.

EXERCISES FOR TEACHING LOCAL GEOGRAPHY AT THE COLLEGE LEVEL

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"Geography is the study of places away-to-hell-and-gone-away," so goes a student definition of the subject. This misconception of geography as a study of distant rather than local areas should always be combatted by the teacher if geography is to be a part of training for every-day life. With the integration of geography into social studies at the elementary and secondary school levels, laudable emphasis has been put on study of the local scene. However, in this practice the student, and often the teacher, believes that what is being studied has no relationship to geography but is some vague discipline known as "social studies." There is left the impression, sometimes more firmly imbedded, that geography is the study of "other places."

Considerable emphasis is being placed on local geography, whether labelled as such or not, at the lower levels of instruction. However, at the college level little attention is paid to teaching local geography. Altho I have emphasized in my own research and teaching "distant" geography, I believe strongly in the importance of teaching, where possible, some "local" geography. Consequently the following notes on exercises I have used may be of interest to fellow teachers.

Two specific exercises have been used with some success in connection with different courses at different schools. They serve as examples of the type of exercises which can be profitably assigned to students to give some taste of local geography. The first exercise was used at Ohio State University in a course in elementary economic geography. With the University located in a fairly

large city, Columbus, an assignment on local geography fitted well into a segment of the course dealing with cities and urban functions. The students were given the choice of two alternative assignments:

A. Walk or ride along any street that goes thru the city or starts in the center and goes to the outskirts. As you go make notes or sketch on a map the various activities that take place along the street. Note, for example, the terrain over which you pass, the nature of commercial enterprises, the transportation facilities, the governmental functions, the types of residences, etc. From these notes draw a strip map of the geography of the route along which you passed. From the map and your notes draw up a two page summary of the relationship of the various functions you have seen with their location, with the terrain and with each other.

B. Choose one feature of the geography of Columbus, for example, state government buildings, meat packing establishments, slum housing, high-class residence, grade schools, etc., etc., and *by personal observation* note its distribution. Note also associated features that may be factors in the locations of the features you are observing. Plot the locations on a map of the city. From the map and your personal observation and judgment draw up a two page summary of the causes for the distribution you have seen.

Students were about equally divided in their choices of the alternative assignments. Often a family or personal occupation made them choose B. Many students who commuted from across the city would choose A and would usually make the comment that they had never before "seen" the distribution of functions along the route. In the first post-war year there were in each class one or two students who did their observation from airplanes. The exercises were not treated as term papers, but as assignments for two class meetings. The results varied from excellent to poor, tho the poor students seemed to do much better work on this type of assignment than on a reading assignment. In the class meetings two or three of the papers on features were read and two or three of the cross sections were displayed and commented on. The conclusions drawn were often the obvious ones, but seemed novel or "things I never thought about" to the students. Sometimes the conclusions were false, for example, where an important factor of past importance was no longer visible and thus not considered by the student. Some of the conclusions were naive; the classic was the student who stated that a casket factory had easy access to the market "since there are always lots of dead bodies lying around." Tho this was a simple assignment, some students became intrigued and went into the problems quite deeply. Of prime importance was the taste for observation of landscape features and for use of maps. An interesting by-product was stimulus given to the rest of the quarter's work by this change in pace. Students who had seen

some local geography no longer considered the subject so remote from their daily life.

The second exercise described in this note was carried on by students this fall at Colgate University. The situation was quite different, many of the students were from urban or suburban homes and were set down in a rural landscape. The course was on North America and given on the upper class level. After an introductory section on the continental distribution of geographic elements, the course took up the continent on a regional basis. It was at this break that the following exercise was assigned:

Join with three of your fellow students to make a team of four men. Adjacent strips, a half-mile wide and seven miles long, going across the Chenango Valley, have been drawn on a master map. Choose one of these strips for your team. On the topographic map (which has been enlarged to a scale of 3 inches to the mile) sketch-map the existing land use. Employ the following categories: woodland, wooded pasture, pasture, hay, wheat, corn, vegetables, minor crops. Correct the topographic map as to cultural symbols: houses, roads, etc. Where possible classify these elements as regards condition and use. Make notations of any other cultural elements. If possible observe soil and land form differences. Have the map give as complete a picture as possible of the observable features in the landscape, both physical and cultural.

Having observed and drawn a map of the strip, write a brief team answer to the question: What relationship is there between the distribution of physical elements in the strip and the distribution of cultural elements.

The students were dismissed from classes for four periods while doing the exercise. On completion of the maps and reports the strips were displayed and a lively class discussion of the results followed. Certain prior concepts (for example, that the valley bottom was the best agricultural land) were exploded (the valley floors were too swampy or had too early frosts for good agricultural use). The fundamental importance of transportation facilities was brought out forcibly. The dynamic character of geography was well illustrated to the students who had observed, for example, the slumping embankment of the abandoned canal, the tottering farmhouses on the isolated uplands and the new pre-fabricated houses along the surfaced highways. As the course progressed with its regional treatment of North America, reference was often made to differences or similarities between the distant regions and the local scene which the students had observed.

These brief exercises on local geography were organized to fit into established course patterns. Other teachers probably have used (or could use) similar assignments adapted to their courses, students and localities. More elaborate exercises or even full

courses on local geography would naturally be desirable, but they are often not feasible. However, even simple exercises such as these on local geography are profitable in geographic instruction. They modify the too prevalent view that geography is a subject devoted to distant places described in textbooks. There is geography in the locality where the student lives. He needs to be made aware of its importance.

ANNUAL MEETING OF THE NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

November 25-27, 1948, Palmer House, Chicago

(TENTATIVE PROGRAM AS OF SEPTEMBER 15, 1948)

Thursday Evening, November 25

6:00 P.M. JOURNAL OF GEOGRAPHY Dinner

For editors of the JOURNAL and members of the Executive Board

9:00 P.M. Executive Board Meeting

Friday Morning, General Session

9:00-10:30 A.M.

Greetings from the Illinois Geographers, Floyd F. Cunningham, President of the Illinois Council of Geography Teachers, Southern Illinois University.

Response, Loyal Durand, Jr., Second Vice-President of the National Council of Geography Teachers, University of Tennessee, Knoxville.

Geography as Seen from the Office of Education (20 minutes). Otis W. Freeman. Specialist for Geography in Higher Education, United States Office of Education. Presented by Claude E. Hawley, Associate Chief of Social Sciences.

Discussion.

Historical Geography in School and College (20 minutes). Russell Whitaker, George Peabody College for Teachers.

Discussion.

Intermission.

10:45-12:00 A.M.

Type of Geography Presented in the Primary and Secondary Schools of England (20 minutes). Neville V. Scarfe, University of London, Institute of Education, Visiting Professor Syracuse University.

Discussion.

Geography in Europe, 1948 (15 minutes). George B. Cressey, Syracuse University.

Discussion.

Friday Noon

12:15 P.M. Yearbook Presentation Luncheon (Sponsored by National Council of Social Studies and the National Council of Geography Teachers)

N.C.G.T. members are cordially invited to any luncheon sponsored by the National Council of Social Studies.

Friday Afternoon

2:00-3:45 P.M. Sectional Meetings

Section 1. Conservation

Chairman: S. S. Visser, Indiana University.

Secretary: Byron K. Barton, Eastern Illinois State Teachers College.

Conservation Education or Tragedy (15-20 minutes). Halene Hatcher, Assistant Specialist for Geography and Conservation, Division of Secondary Education, United States Office of Education.

Geographical Aspects of Ohio's Conservation Laboratory (15-20 minutes). C. L. Dow, Ohio University.

Utilization of Field Areas in Teaching Conservation at the University of Wisconsin (15-20 minutes). Arch C. Gerlach, University of Wisconsin.

Section 2. Field Trips and Tours

Chairman: Pauline P. Schwartz, State Teachers College, New Haven, Conn.

Secretary: James H. Glasgow, Michigan Normal College.

Illinois State Normal University Tours (15-20 minutes). A. W. Watterson, Illinois State Normal University.

A Geography Lecturer's Experience with the Marshall Plan for Action Tour (15-20 minutes). George W. Hoffman, Graduate Student, University of Michigan.

The Annual Fall Field Course, Clark Graduate School of Geography (15-20 minutes). W. Elmer Ekblaw, Clark University.

Section 3. Color Transparencies

Chairman: Elizabeth Eiselen, Wellesley College.

Secretary: Carol Y. Mason, University of Tulsa.

Values and Problems in the Use of Color Transparencies. (Results of Color Transparencies Questionnaire), Elizabeth Eiselen.

The Value of Color Transparencies Illustrated. Fred E. Dohrs, Northwestern University.

Discussion: The Future of Color Transparencies in the Teaching of Geography. Leader, Marion E. Wright, Rhode Island College of Education.

Section 4: Gamma Theta Upsilon (National Professional Geography Fraternity)

Chairman: Warren Strain, State Teachers College, Slippery Rock, Pa.

Secretary: Ina Robertson, State Teachers College, Valley City, N.Dak.

Round Table Discussion on Worthwhile Projects for Local Chapters.

Participants will consist of representatives from the following chapters: Alpha Chapter, Illinois State Normal University, Normal; Kappa Chapter, State Teachers College, Valley City, North Dakota; Mu Chapter, Duluth Branch, University of Minnesota; Rho Chapter, Eastern Illinois State College, Charleston.

4:00 P.M. Tea**Friday Evening****6:30 P.M. Annual Banquet and Reception for Past Presidents**

Address: On the Treatment of Controversial Topics in Geography, Preston E. James, Syracuse University.

Saturday Morning**9:00 A.M. Geography and World Understanding**

Commercial Air Transportation—1948 Version, Dr. G. Etzel Pearcy, System Geographer, Trans-World Airline.

Crisis in World Trade, Dr. Charles C. Colby, The University of Chicago.

Planetary Thrombosis, Dr. Sidman P. Poole, University of Virginia.

Finland—Bridge to the Atlantic, Dr. Eugene Van Cleef, The Ohio State University.

Geography and Community Education in World Affairs, Dr. J. Warren Nystrom, The University of Pittsburgh.

Saturday Afternoon 2:00 P.M., General Assembly

(Attendance at this meeting is restricted to members.)

Announce the winners of the A. E. Parkins and Ellsworth Huntington Prizes.

Our Thirty-fourth Year, Clyde F. Kohn, Northwestern University.

Financial Status of the National Council, John H. Garland, University of Illinois.

The Status of the Interrelationship between Geography and Aviation, Richard L. Tuthill, University of Kentucky.

Survey of Research in Geographic Education, Henry J. Warman, Clark University.
Facilitating the Use of Maps, Katherine Thomas Whittemore, State Teachers College, Buffalo.

Preparation of the Manuscript for Geography in the High School, Zoe A. Thralls, University of Pittsburgh.

Publications Committee in Action, Melvina Svec, State Teachers College, Oswego.
New Committees, Thomas Frank Barton, Indiana University.

A New Administration, Katherine Thomas Whittemore, State Teachers College, Buffalo.

Prospects for 1949, Earl B. Shaw, State Teachers College, Worcester.

THE NATIONAL COUNCIL AT WORK

NEWS ABOUT AFFILIATED ORGANIZATIONS

Suitable announcements may be made if the proper officer, or any member of an affiliated organization will send news about meetings directly to the JOURNAL OF GEOGRAPHY. Remember that material for any monthly issue of the JOURNAL must reach the editor by the 15th day of the preceding month.

INVITATIONS FOR 1949

Persons who wish to invite the National Council of Geography Teachers to meet in their city or on their campus should send their letters to President-elect, Dr. Earl B. Shaw, State Teachers College, Worcester, Massachusetts, and Secretary, Dr. Clyde F. Kohn, Northwestern University, Evanston, Illinois.

ACCOMMODATIONS AT THE PALMER HOUSE

ROOMS. Single rooms at the Palmer House begin at \$5.00. Double rooms are \$9.50 and up. Some double rooms are large enough for cots and rollaway beds. For each extra person in the room there is a charge of \$3.50. All rooms are with bath. Reservations should be made early.

BANQUET. Our banquet will be held Friday evening November 26th in the Palmer House at 6:30 P.M. Dr. Preston E. James' address will be "On the Treatment of Controversial Topics in Geography." The tentative price of the dinner is \$4.50.

COMMITTEE ON PREPARATION OF LISTS AND BIBLIOGRAPHIES ON MOTION PICTURES FOR GEOGRAPHY TEACHING

Miss Thelma Waddle, Board of Education, Pittsburgh is chairman of this committee. The Executive Board has approved the appointment of a committee to prepare lists and bibliographies on motion pictures. The Planning Committee recommended "that this committee be appointed for three years to prepare or have prepared material suitable for publication in leaflet form on motion pictures. Topics should be selected from the following list or from those approved by the Executive Board:

1. A bibliography on the selection and use of motion pictures in teaching geography.
2. A list of companies that produce motion pictures for use in teaching geography with brief descriptions of the type of pictures produced and naming the geographer or geographers serving as advisors."

1949 BUDGET COMMITTEE

Following the precedent of former years, I have asked the First Vice-President, Earl B. Shaw, the Second Vice-President, Loyal Durand, Jr., and the Treasurer, John H. Garland, to constitute the Budget Committee. Will committee members discuss their financial needs for 1949 by letter, and will chairmen promptly answer Dr. Shaw's budget requests?

THOMAS F. BARTON, *President*

18 JAN 1949

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OIL PRODUCTION IN THE MIDDLE EAST

WARREN STRAIN

State Teachers College, Slippery Rock, Pennsylvania

One of the most coveted parts of the world is the Middle East, which includes part of the land adjacent to the Arabian, Red, Black, Caspian, and eastern Mediterranean seas. Lying as it does across one of the world's major trade routes and at the junction of three continents, this area has a location which has long been recognized as one of great strategic importance. With the development of petroleum resources there, the strategic value has been greatly enhanced, for it is likely that this region has more oil than all the rest of the world combined.¹ As the air age develops, the necessity of having large supplies of petroleum available becomes more and more imperative. Western Europe, an area of great industrial and commercial importance, is especially deficient in reserves of these volatile hydrocarbons; consequently European nations are making desperate attempts to acquire oil concessions in the Middle East as well as in other parts of the world. Even the U.S.S.R., which claimed to have fifty-five per cent of the world's petroleum in 1937, has recently attempted to reach an agreement with Iran to produce oil in the area south of the Caspian Sea. The Russian interest in the Arabian-Palestine controversy may be related to the resources of that part of the earth, since it is now obvious that previous Russian estimates of their own oil reserves were far too high. Recently American companies have begun active participation in the Persian Gulf Region. Thus it may be seen that the strategic location and the huge reserves of vital power, petroleum, combine to make this "Land of Five Seas" a much sought after area.

¹Recent estimates have placed the oil reserves of the Middle East at between twenty-seven and one hundred billion barrels.

EUROPEAN INTEREST IN MIDDLE EAST OIL

As early as 1882, Admiral Lord Fisher urged that the British fleet be converted from coal to oil as a source of power, stating that it would increase the efficiency of the fleet by fifty per cent. He had five strong arguments which still hold true:² (1) Refueling with oil can take place at sea, thus keeping all the fighting ships near or in the zone of activity, while coal refueling must be carried on at a base. It has been estimated that one-third of the coal-powered vessels in every conflict must be away from the scene of battle, getting refueled. (2) Oil gives three knots more speed than does coal when used in the same ship. (3) The engine room personnel can be reduced sixty per cent when oil is used. (4) There is a more rapid deterioration in coal than in petroleum. (5) Since oil is fluid, it can be easily stored in parts of the ship not usable for coal storage. But Britain did not control oil reserves.

At that time most of the petroleum production of the world was confined to the United States and to the Caucasus region of Russia. With the bringing in of a gusher in the Baku District in 1898, Russia forged ahead of the United States, temporarily, to become the world's greatest producer. This caused the British, Dutch, and Germans to view the situation with alarm and they began to look around for areas where they could obtain concessions. The Dutch turned to the East Indies while the others sought privileges in the Middle East, and thus began a period of intense international rivalry. The story of the acquisition of concessions is filled with plots, thrills, intrigue and revolutions.

In Iran the British have a 100,000 square mile concession in the south while the U.S.S.R. desires a similar area in the five northern provinces. The Russian concession was not confirmed so production has not yet begun in the north. Controlling interest in Iraq is held by the British but American, Dutch and French companies bought shares in the producing company. In Saudi Arabia the concessions are held solely by American companies.

OIL PRODUCTION IN IRAN

Altho William Knox D'Arcy, an Australian businessman, obtained his concession in 1901, actual production did not begin until seven years later when a well was drilled at Masjid-i-Sulaiman in

²Ludwell Denny, *We Fight For Oil*. New York. 1930. P. 24.

the Province of Khuzistan (Fig. 1). The exploring party became interested in this area when it found oil springs and asphalt pools at the base of the Asmari Mountains in southern Iran. The asphalt pools resulted from the evaporation of the more volatile materials from the oil springs, and provided an item of commerce at a very early date. It is probable that the basket in which Pharaoh's

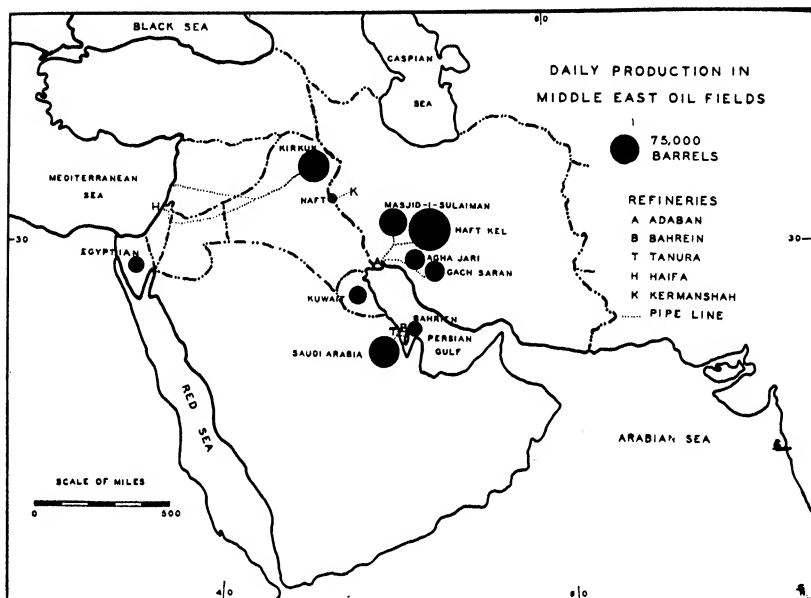


FIG. 1. Daily oil production in 1946 by producing fields. The area of the dot is proportional to the output. The location of the Alwand Refinery is covered by the production dot for the Naft field.

daughter found the infant Moses, was waterproofed with tar from this area.

In looking about for a landmark so the site could be found by the drilling company, the exploring party found the ruins of Masjid-i-Sulaiman Temple (Temple of Solomon) which was built by the Zoroastrians about 200 B.C. The Zoroastrians, it will be recalled, were fire worshipers, inspired by the "Eternal Fires" in the area. It is reasonable to believe that these fires were caused by the ignition of escaping jets of gas associated with the oil domes, and their constant burning gave the impression that the

fires were eternal. Since the drilling of the well at Masjid-i-Sulaiman, production has expanded to four other fields which extend in a northeast-southwest direction (Fig. 1).

The average daily production in Iran is about 400,000 barrels (1947), seventy per cent of which comes from two fields, namely, Haft Kel and Masjid-i-Sulaiman. These two fields have jointly produced over a billion barrels of oil and the wells here are still producing by natural flow, evidence of the great quantity of gas associated with the oil structure. There are fifty-one wells in production in the five fields of Iran and from these comes sixty per cent of the total oil produced in the Middle East.

As is characteristic of most of the petroleum producing areas of this region, the "black gold" is obtained from the Asmari limestone which is about one thousand feet thick capped by an impervious layer of rock known to geologists as the Lower Fars Formation. Asmari limestone is quite dense and has a low porosity, a condition which is not at all conducive to the storage of oil. However, in the folding process, faults and fissures have resulted and it is from these cavities and breaks that the petroleum is taken. Where fissures do not exist, commercial production is impossible. There is striking uniformity in the size of the domes, each covering about sixty square miles.

A large refinery, located on Abadan Island in the delta of the Tigris-Euphrates and about one hundred fifty miles from the producing fields, handles most of the crude coming from the four eastern fields. There are, however, topping plants at Agha Jari, Gach Saram and Masjid-i-Sulaiman. The petroleum is transported by pipe line to Abadan and from there the refined products are exported thru the Persian Gulf. Like all the refineries in the Middle East, Abadan does not manufacture lubricating oils altho gasoline and asphalt are produced in large quantities.

The crude produced in the Naft Kjanek and Naft-i-Shah fields (Naft on Fig. 1), located on the Iran-Iraq boundary, is taken to the small refineries at Kermanshal, Iran and Alwand, Iraq. These refineries serve the local market for the two countries and are of greater importance locally than is indicated by the volume of their output.

IRAQ PRODUCTION

In northern Iraq and extending in a northeast-southwest direction for a distance of about sixty-five miles, is the great Kirkuk

anticline from which is produced almost the entire output of Iraq. From the map it appears to be a part of the same anticlinal structure which supplies the oil for Iran but the exact relationship is not known. The importance of this great anticline was recognized immediately upon its discovery in 1927. However, production was held up until some adequate method of transportation for the oil could be provided.

Since most of the petroleum was to be taken to western Europe, it was decided to build pipe lines to the Mediterranean. Twenty years ago this was a very great undertaking and accounts of the enterprise at that time suggested serious doubts as to its practicability. There were many new and trying problems which had to be solved. The route to be followed was from Kirkuk to Haditha where the line forked, one branch going to Tripoli in Syria and the other going to Haifa in Palestine. This made a pipe line almost 1,200 miles long, since Haifa is 621 miles and Tripoli is 523 from Kirkuk. Much of the route is thru a desert and the very great diurnal range in temperatures led to excessive expansion and contraction, a condition which caused the pipes to break. To overcome this, the pipes had to be buried but this meant the struggling with shifting sand or the blasting of solid rock. A second problem then arose. Because of the light rainfall the soil has a high salt content which led to very rapid corrosion of the steel tubes and necessitated having them wrapped in asbestos. Late in 1934 the line was completed but the troubles were not over, for hostile Arab tribes immediately began to sabotage the enterprise by shooting holes into the line and then setting fire to the spouting oil. Constant patrolling has eventually reduced to a minimum this source of trouble.

Production in Kirkuk has consistently been around 80,000 to 90,000 barrels daily, this quantity being limited by the capacity of the transmission line. With the addition of two new sixteen-inch pipes, which it is hoped will be in operation by the close of 1948 or early in 1949, production will probably jump to 300,000 barrels per day.

As in the case of Iran, the Kirkuk field is composed of folded and faulted limestone with large fissures which provide a free interconnection between the wells and which permit the uniform draining of the producing structure from a few outlets. Actually, ten wells located at the eastern end of the field in an area of eight

square miles are providing the present output. It is planned to expand production to twenty more wells located over an area of eleven square miles when the new pipe line is completed. The Kirkuk anticline is sixty-five miles long and from two and one-half to three miles wide, thus providing much virgin territory for future expansion.

There is a relatively high sulphur content in the crude, a condition which presents problems in the refining process. Recently a plant was constructed at Kirkuk to remove part of the sulphur before it is transported thru the pipe line. A refinery was built at Haifa in 1940 and an American company is now considering the possibility of erecting one at Tripoli.

In 1938 a subsidiary of the Iraq Petroleum Company obtained a concession to produce oil west of the Tigris River, about thirty miles south of Mosul, for the next seventy-five years. However, to date, neither has there been any commercial production in this area, nor is there much prospect for a large output in the future.

KUWAIT

Near the mouth of the Tigris and Euphrates is the Kuwait Sheikdom, an independent country about the size of the State of Connecticut. The entire country is a desert and most of the people live in the old historic seaport of Kuwait, altho a few nomadic herders carry on grazing in the surrounding dry lands. Shortage of water is a major handicap, the domestic supply for the port of Kuwait having to be imported chiefly by means of sail boats. In spite of the scarcity of water, which is essential in drilling for petroleum, eight oil wells were drilled just before World War II, yielding a current production of about 30,000 barrels daily.

BAHREIN ISLAND

Lying about midway between the mainland of Saudi Arabia and the Qatar Peninsula on the western side of the Persian Gulf is Bahrein Island, a dagger-shaped piece of land about thirty miles long and ten miles wide (Fig. 2). Geologically the island is quite simple, with an anticlinal ridge extending in a north-south direction and forming a dome near the center. In 1932 when an American company completed an exploration well it was soon realized that a major field had been discovered. This field is about seven and one half miles long and two and one half miles wide, the oil

being found in limestone at a depth of 1,800 to 2,200 feet. Already seventy-four wells have been drilled and no dry holes have been encountered. In 1936 a well was drilled to greater depths but while more oil was found, there was a preponderance of gas. Petroleum production now reaches 20,000 barrels daily.

Before the discovery of oil, Bahrein was important only for pearl fisheries, dates and a little trading. Except for small sections, the island consists of desert country with high temperatures and a high humidity thruout the summer and fall months. During the

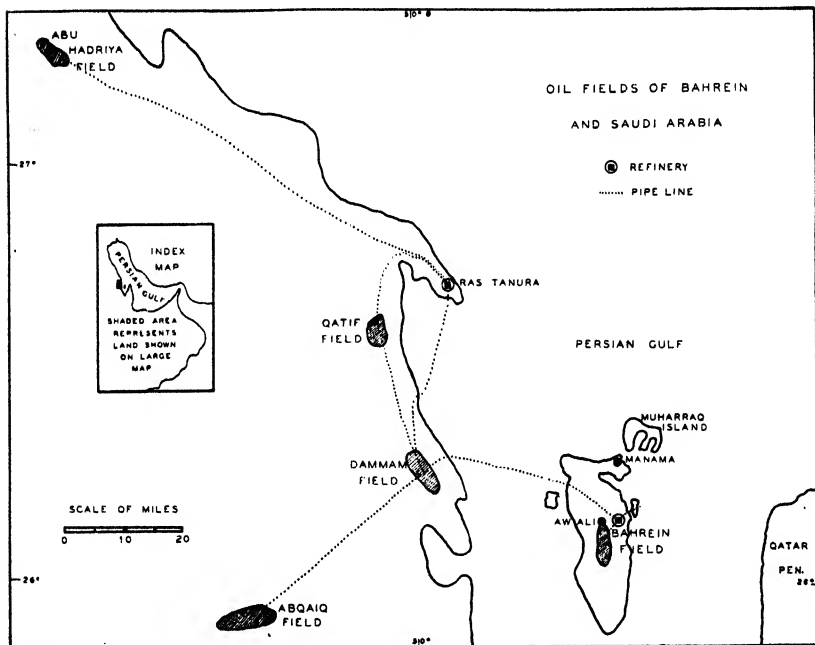


FIG. 2. Oil producing fields in Bahrein and Saudi Arabia.

winter, sensible temperatures are relatively low, consequently houses without heat are uncomfortable. The chief town and seaport is Manama, located on the northeast corner of the island. Due to the shallow water just off shore, tankers must dock about three miles out to be loaded by lighters. With the development of the oil resources, new wharves are being built so that direct loading on to the ships will be possible.

About eighteen miles south of Manama is the company town of

Awali which was built "from scratch" with the development of the oil fields. There are one hundred forty houses for married members of the staff, bachelor quarters, a club, restaurant, laundry, ice plant, office buildings and other conveniences of a modern city. There are three central air conditioning plants which serve every building in the city. During the winter hot water is circulated thru the air conditioning pipes to heat the homes.

Three miles from Awali is the refinery which not only processes the crude from Bahrein but also handles 50,000 barrels daily from Saudi Arabia. Altho well water is used in the boilers, sea water is used for cooling operations. The company also operates a steel-drum manufacturing plant with a capacity of 50,000 drums per month. These containers are used for shipping products from the refinery. An airport which has recently been built on the small island of Muharraq (just northeast of the city of Manama) is connected with Bahrein Island by means of a causeway.

SAUDI ARABIA

The first concession granted in Saudi Arabia was obtained by an American company in 1933. This concession was vast in extent, equalling about one-fifth the area of the United States. Five years later a well was completed to a depth of 4,727 feet, and in 1945 it was still flowing at the rate of 2,500 barrels daily. Since that first successful well was drilled, twenty-three more have been put down in the same field, the Dammam, which contains about twenty square miles (Fig. 2).

In addition to the Dammam, three other producing areas have been discovered—viz, the Aba Hadriya, the Abqaig, and the Qatif (Fig. 2). When Aba Hadriya was discovered in 1940, a well had to be drilled to a depth of almost two miles. The largest field yet to be discovered in Saudi Arabia is the Abqaig which came into production in 1941. Crude from all of these pools will be shipped by pipe line to two refineries—the one at Ras Tanura and the one on Bahrein Island. In view of the fact that the Qatif was the last field to be discovered, it is too early yet to determine just how productive it may be.

The Arabian-American Oil Company, commonly called Aramco, has done almost everything to gain the good will of the Arabs. For instance, all employees observe Friday, the Moslem Sabbath, as a day of rest, and all Arabs are given time off three times each day

to pray and bow towards Mecca. Even bells are prohibited on the company's schools, since Moslems associate bells with Christian churches. Furthermore, water wells have been drilled in the desert and charged to good will. It is probable that great changes will appear in Saudi Arabia as the traditionally poor nation receives royalties from the oil resources.

EGYPT

Any account of oil in the Middle East would be incomplete without some mention of recent developments in the "Land of the Nile." In 1946 Egypt consumed 6,300,000 barrels of oil more than it produced, a fact which has spurred the government to encourage a larger local production. Exploration has been hampered by the presence of land mines laid during the recent war and which, due to the dry atmosphere, almost never deteriorate.

The only commercial production of petroleum in Egypt is on the western side of the Red Sea, near the Gulf of Suez, where about sixty per cent of the local requirement is produced. Indications are very favorable for finding oil on the western side of Sinai, about forty miles south of Suez.

Early in 1946 attempts were made to discover oil west of the Nile when a well was drilled at Abu Roash, ten miles west of Cairo. This attempt resulted in a dry hole and the well was abandoned after granite had been reached.

SUMMARY

Oil production in Iran accounts for sixty per cent of the present petroleum output in the Middle East and is confined to the southern part of the country. Within a few years oil will probably be produced in the five northern provinces of Iran and this will undoubtedly greatly increase the total production of the country. With the completion of the new pipe line from Iraq, production in the Kirkuk region will be greatly augmented. With increased output by American companies in Saudi Arabia, it is likely that the Middle East will forge ahead to become the world's leading area in petroleum production.

CITY STUDY IN THE UPPER ELEMENTARY GRADES

ADELAIDE BLOUCH

Hayes School, Lakewood, Ohio

Cities, with their rattle of traffic, smoke of industry, and crowds of shoppers, are the homes of many of our pupils. We try to lead our elementary geography classes to see that the city is an outgrowth of the region, dependent upon it and also giving services to it. To do this, we have tied together the work of the city and the production of the surrounding area.

By a study of the structure of a particular city, thru observation of its site and zonal characteristics, can we make the functions which it performs so meaningful that a city will not be merely a dot on a map, a particular location, or a name associated with a certain type of work? Can we make our pupils eager to investigate the patterns of cities other than our own, and to see them as groups of people, living and working together, like our city, and yet unlike it in some ways? Can we give them the desire to find reasons for these likenesses and differences?

Our pupils are traveling during vacation periods and their trips usually have as destinations, cities about which they have studied or will study. If the idea of a city pattern has become a part of the children's thinking, the visits, however brief they may be, will make the geography study functional.

To secure these understandings and attitudes, it is not necessary to introduce investigations which are complex and unsuited to the children's abilities and attainments. From their studies in earlier grades, pupils recognize certain functions of the city, such as wholesale and retail handling of food products, means of transportation, residences of various types, buildings such as the department stores, banks, hotels, post office, fire departments, and other forms. Important industries and the shipping of raw materials and finished products to and from the area may or may not have been studied but we need not avoid them in discussing the forms of our city, as they are probably familiar sights.

By use of a simple diagram the pupils are led to place the heart or principal business section of the city of Cleveland, industrial areas, poorer and better residential districts, with relation to each other, and to find reasons for this placement. The class is shown that while our suburb, Lakewood, is an independent municipality,

it is really a part of the large nearby city. New words necessary for this city study are listed and carefully explained. We take advantage of every item of available supplementary reading material and pictures which would help to clarify this concept of a city pattern.

To orient the class in the city study, a large air view of the principal business section of their city is shown or a post card view of this section is presented in an opaque projector. The children point out places which they recognize. They call this part of the city "down town" and can give a number of reasons for going there, such as shopping, theater, baseball games at the stadium, banking, doctors, the train terminal, as well as work employing members of their families. They suggest means of transportation and routes by which they get to the heart of the city. Some pupils provide themselves with maps of the city. By using a map in the opaque projector we can follow several routes to the down town section and recall what we would see on our way.

It is well at this point to take a trip thru our city by bus, if this is possible, to relate to the actual landscape, the points which have been discussed. Guide sheets call attention to natural and cultural features which should be observed, and the route is marked on a simple map. The trip takes us from a residential area in the suburb to the core of the city and returns by another route to the suburb in which we live.

OUR TRIP

Passing thru the residential area at the western edge of Cleveland we approach the waterfront. Here our route carries us thru Edgewater Park along Lake Erie, with spaces for concerts, games, bathing, picnicking and fishing. The shore drive passes the yacht basin where privately-owned boats are harbored. We also see a sewage disposal plant which serves this westerly section.

To the south of the drive and parallel to it for a considerable distance, is the New York Central Railroad whose route takes advantage of the lowland provided by the lake plain.

Our route takes us, as we get closer to the center of the city, from the low, filled-in land along the lake to the ridge left by an older lake bed. To our left lies an old mouth of the Cuyahoga River and on the "island" formed between it and Lake Erie the land is largely owned by the Pennsylvania Railroad and given over to shipping. An outer harbor is provided by a breakwater wall extending several miles to the west of the present river mouth and also to the eastward. In the western section, ore is unloaded and placed in railroad cars or storage piles for trans-shipment to inland iron and steel centers. Unloading of ore and other bulky products is also done in a part of the inner harbor provided by the old river mouth. We can see in the distance to the eastward, the coal-loading machinery and near it the Public Stadium in a second water front recreational area.

To the south of the highway our route follows a main artery to the heart of the city, Detroit Avenue, one of the earliest roads used by travel to the westerly lake settlements because it could take advantage of the ridge of the old lake bed.

We see the pumping station and filtration plant, advantageously situated to take water from far out in the lake thru tunnels, and send it to the west side of Cleveland and westerly suburbs.

On this part of our trip we see stores and manufacturing plants and also sections of poorer housing. Here is also a government housing project, at the edge of the river valley and on land provided by slum clearance. At the edges of this area and here and there among the manufacturing concerns there are some poor houses.

The shore way route takes us to a high level bridge crossing the broad valley of the Cuyahoga River and into the commercial heart of the city. There are many sights to be seen if we could stop on the bridge. However, from our bus windows we can see other high level bridges, several types of low level bridges, railroads which follow this lowland route to the center of the city, a grain elevator and flour mill, cement elevators, and other manufacturing plants.

In the business section we note many tall buildings, including the Terminal Tower, Cleveland Hotel, Telephone Building, Post Office, department stores, office buildings and banks. There are several kinds of public transportation focusing at the center of the city. We might stop and go up to the Terminal Tower because from its Observation Floor we can view the landscape in all directions or a considerable distance on a clear day, pointing out main arteries of travel and certain familiar and unfamiliar landmarks.

Leaving this vantage point we resume our trip. Our route takes us south along Ontario Street, passing Central Market, to a ramp leading into the Flats. This is largely an industrial area, taking advantage of the inner harbor for receipt of bulky materials, flat land affording space for storage piles, manufacturing establishments and railroads, one of which uses space formerly occupied by the old canal. We pause at the foot of the ramp to view the Terminal and railroads leading into it, the various types of bridges, the fire boat and river traffic.

Passing along the valley to the southward (or upstream) we enter a road which follows a tributary valley, Train Avenue in Walworth Run. This road, as its name indicates, parallels a railroad. It is easy for the pupils to see why this is a good location for a railroad, and the industries which are situated along it. The stockyard and a number of meat packing plants are concentrated near the point where Train Avenue emerges into Clark Avenue.

Many of the homes located on the rim of this industrial area are quite poor, particularly at points closest to the heart of the city. Farther along the route there are side streets of better residences altho quite old. Continuing westward along Clark Avenue and Lorain Street we pass into a better residential area.

Our route also takes us along main arteries where are located local shopping districts, theaters, banks, churches and other service and social centers.

Eventually we reach the outskirts of the city and into neighborhoods where the housing is much better than that closer to the heart of the city. In the outlying district there are some manufacturing plants, and business firms such as ice and fuel companies, lumber yards, and bakeries which service that section of the city. Our suburb is largely a residential area, however.

So in our trip we see many kinds of land use and sections of all zones.

A set of colored film slides are ready to use as a substitute when a trip is not possible or they may be used in the discussion

period following the trip. Another use of such material is in testing.

In summarizing our investigation of Cleveland we encircle on our large map the area which is approximately the heart or principal business section, lying east of the river and somewhat back from the lake. Another circle, roughly enclosing the industrial area, starts at the lake shore on the west near the location of the ore docks, swings around the core of the city, widening on the eastward side and again ending at the lake line. This fan-shaped pattern is repeated in a third zone which extends approximately to the city limits and an outer circle which encloses the suburban areas.

Adopting a color key to show the business, industrial, residential and recreational sections and railroads we attempt an air view interpretation of land uses as we found them. As a first attempt, pupils work in pairs or small groups on the blackboard or large sheets of paper. Individual air views are then tried, using crayons and manila paper.

When we are ready for the study of another city, a large map of the urban area is placed before the class. Water is shown in blue and clear dotted lines indicate city limits. Each child uses a small file card on which to sketch the shape of the city being studied, the back of the card being used for recording data such as location, latitude, elevation, population and outstanding facts about work. The class may find it interesting and helpful to know some of the history of a city—facts which account for its early settlement and rapid growth at certain periods. Individual reference work and reports may be used for this.

If an air view of the city is available, we examine it to find the location of familiar forms—docks, railroads, industrial plants, tall buildings, parks and probable residential areas. Using the same color key as before we attempt air view interpretations of land uses.

The children of two classes were enthusiastic about communicating with classes in other cities to request information about the location of the chief business district, the industrial and the residential sections. We received a number of city maps, both printed and hand drawn, pictures, and post cards as well as interesting letters about the leading kinds of work. In exchange we sent maps, postcards, literature, and letters describing Cleveland.

Each child places the file cards which he makes in an envelope and keeps his air view interpretations in a notebook.

Of course we can not find time to do all of these exercises as a class on every city studied, but we go back to it with sufficient frequency so that after the techniques have become somewhat familiar routine the class can work as groups or committees, as they like to be called: one group gathering data from reference sources; a second finding information and pictures about industries; a third group making file card maps; and a fourth group trying land use interpretations from air views. There are always a few outstanding individuals who are eager to go ahead independently doing more than the assigned problem.

Tests used following the study of regions of the United States include a set of city outlines cut out of colored paper and mounted on bogus paper, and a set of descriptive paragraphs, each item to be matched with the name of a city.

As in other types of laboratory exercises, individual attainments vary greatly with interest and ability but checks of the results and recognition of effort bring satisfaction in personal and group achievements. The success of the exercise in a large measure depends upon the background which the class has and the manner of presentation, which must be adjusted to the particular group.

The entire activity might be criticized as "too heavy" for elementary classes but in attempting to delete or simplify the material, it would be difficult to pick out specific understandings and abilities which are not desired in our curriculum, and on this level of geographic experience as checked with published lists and textbooks. Among the abilities and habits which we try to develop are:

1. Ability to identify various combinations of work and natural environment with specific locations.
2. Ability to associate density of population with types of work related to natural environmental factors.
3. Ability to recognize certain large cities from descriptions of the uses man makes of their natural settings.
4. Ability to locate the large cities of the United States on an outline map in the correct states and on the correct waterways.
5. Ability to read maps showing street patterns of cities, highway patterns, and railway patterns.
6. Ability to read such relations from maps as road pattern related to surface, street pattern of a city as related to topography and waterways, and railroad pattern as related to topography.
7. Ability to identify in the landscape and in pictures certain types of manufacturing forms.

8. Ability to use certain terms:

parallel	commercial	outer harbor
ridge	residential	inner harbor
zone	industrial	tributary
route	break wall	valley

9. Realization of the study which the highway engineer or railroad builder made of the surface of the land when selecting the particular route for a road.
10. Habit of consulting maps immediately when reading about a new place.
11. Habit of observing carefully the everyday activities one sees about him.
12. Habit of thinking in terms of geographic understandings concerning many of the everyday activities that one sees about him.

To the above list may be added the enjoyment of relating our everyday, out of school experiences to our school activities—in other words, making our geography study functional.

A NEW MAP OF TUNG PRODUCTION IN SOUTHEASTERN UNITED STATES

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Tung oil, which is used industrially as a drying agent in paints and varnishes or as a waterproofing agent, was not produced in significant amounts in the United States until World War II. Before 1939, China was our leading source of supply of the oil, which is extracted from the nut of the tung tree, despite the fact that the tree was first introduced into the southeastern United States as early as 1905. Recent production of tung oil in the United States is concentrated in the Tung Belt, which includes all areas producing tung nuts in 1945. Only those areas producing over 100 tons are indicated by the appropriate dot symbols.

The Tung Belt of southeastern United States delimits the area in which tung nuts are produced. (See map.) It extends in a narrow westerly direction from southern Georgia and northern Florida into east central Texas. The major concentration of tung nut production is in southern Mississippi and northeast central Louisiana, near Bogalusa, Louisiana. Other minor concentrations are the Capps area of northern Florida, and the Gainesville area of north central Florida. The Bogalusa area produces about sixty-four per cent of the tung nuts of the United States. Twelve per cent are produced in the Capps area, and only six per cent in the Gaines-

ville area. Other producing areas are scattered thruout the Tung Belt.

Conditions of temperature and precipitation set the general limits of the Tung Belt. The requirement of the tung tree for a well-defined three month dormant season (at least five hundred hours of temperatures of 45°F or lower each year) sets the southern limit. Freezing temperatures soon after the tree drops its fruit are desirable, to prevent the appearance of buds which would be

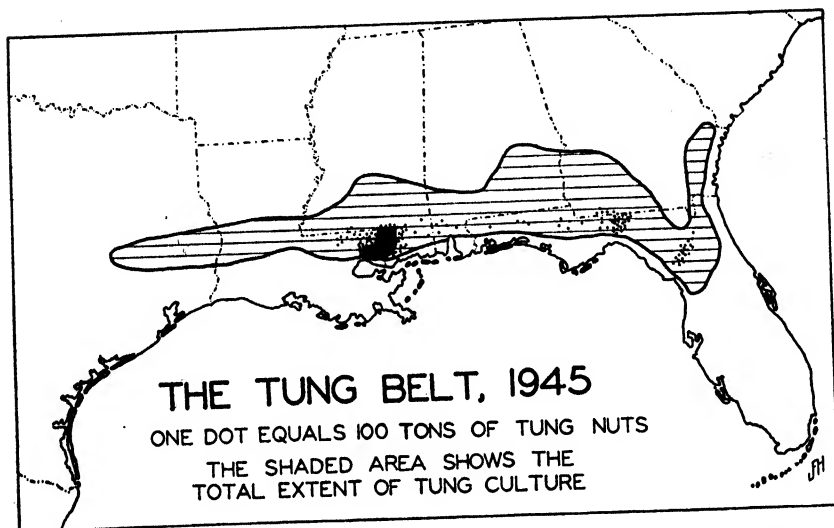


FIG. 1. The Tung Belt of southeastern United States, 1945. Source: U. S. Census of Agriculture, 1945.

subsequently damaged by frosts. The Gainesville area in north central Florida has been consistently troubled by this tendency of the tree to bud before the first winter frosts.

The factors setting the northern limit of tung nut production are not too well known. However, severe winter temperatures or late spring frosts prove damaging to the tree, so most successful plantings are located near the Gulf of Mexico. The general western limit is set by precipitation. Forty inches of annual precipitation are desirable, and there have been no successful plantations in areas with less than this amount.

Other factors affect the growth of the tree within the Tung Belt. Adequate drainage, both air and soil, is mandatory. The tree produces best on slightly acid soils, preferably fertile sandy loams.

Most tung orchards are still in the experimental stages. For this reason, until further progress is made, the tree will not be planted in areas which might be better suited to its production.

WINGS OVER THE ATLANTIC—THE TIME-PLACE FACTOR IN GEOGRAPHY

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On the hazy afternoon of June 3, 1947, in showery weather, my wife and I arrived at La Guardia airport an hour before flying time. Lowering thunder clouds on a near horizon growled dissatisfaction at the invasion of their realm by giant beetles with spread wings, for that is what scores of airplanes looked like, parked at various angles at irregular intervals across the great flat reclaimed not many years ago from East River. Some of them were standing in mud puddles.

Several DC 4s were conspicuous because of their alignment, drawn up along a ramp, waiting turns to be serviced by oil trucks standing by. While one of them turned around slowly with one wheel on a little turntable, another started to move to a new position towed by a tiny tractor. A DC 3 in the vicinity was warming up, and another one nearby was inspected by a mechanic who drove up in a maintenance truck. A third moved along a distant runway preparing to take off. DC 3s have been for many years standard planes, work horses of the air, in the service of all the commercial lines. Planes were visible in the air nearly all the time, circling and then heading landward, oceanward, or down to earth.

We entered the International Terminal, a rotunda with a huge globe in the center. At desks between marble pillars passengers were checking in or making enquiries. Some of them admired the mural decorations, imaginary scenes associated with air transport. People walked over to the bulletin board showing, "Departures and Arrivals," looked at it a moment and strolled off. At short, irregular intervals, a loud speaker paged passengers, asking them to report at a designated desk or office.

Signs above the desks indicated the international aspect of air travel. One of them read, "Speed Boat Service: B O A C," that is the British Overseas Airways Corporation; *Linea Aero-*

postal Venezolana represented one of Latin America's lines; "Air France" was there for the continent of Europe. AOA, American Overseas Airlines, T W A, Trans-World Airlines, and Pan American reflected the great interest of people of the United States in trans-Atlantic travel.

Our baggage, tagged and weighed, was taken on board while we sat in the waiting room. As the door to the ramp opened, an attractive stewardess asked the assembled group to follow her.



FIG. 1. North Brother Island. Bronx-Whitestone Toll Bridge in the distance.
(Photo by J. W. Coulter)

It was with something of a thrill that I took a seat in the "Clipper Eclipse" for my first over-seas flight. As the door of the cabin was drawn across the opening and pushed securely into place, the whirr of the propeller and the responding vibration of the plane indicated everything was ready for the start. At four-fifteen, New York daylight saving time, we moved away, very slowly at first.

As the great machine taxied along the ramp, a bright sun appeared, casting shadows of the wings beneath us. While we stopped a few seconds before entering the runway, a silvery glint in the sky marked the silhouette of a plane coming in. The engines suddenly speeded with a roar, shaking the cabin with vibrations, while the wind from the propeller blades waved the nearby grass vigorously. Just outside my window the wing flaps rolled slowly out with a distinct hum. The landscape whizzed past and I could

not tell just at what moment the wheels left the runway. As we gained altitude quickly, big factories along the river began to look very small, and North Brother Island with its tall structures appeared away below us like a miniature. In only a few minutes from the take-off we were heading northwards above a bank of fleecy, cumulus clouds.

Speeding thru the air at 250 miles per hour, the sensation was little different from that on a railway car, except that ear drums popped now and then with decreased pressure due to increase in altitude. The cabin was pressurized for "normal height," 8,000 feet. At 17,000 feet we were higher than cirro-cumulus and cirro-stratus clouds and only the great blue vault of space was above us. Moisture condensed on the inner glass of the double window, for it was now very cold outside. A great glare of bright sunlight, reflected from the clouds, made dark glasses comfortable and now and then thru breaks to the east we obtained glimpses of the New England coast and the ocean beyond.

THE ATLANTIC

It seemed only a little later when we were over the Bay of Fundy with the white cliffs of the west coast of Nova Scotia on our right. Down below us the ocean appeared a dim blue.

By six o'clock in the evening (N.Y. d.s.t.) the sun was below the clouds, and the somber shades of evening surrounded us. As the going became bumpy and the wing tips tilted up and down, an electric sign in front read, "Fasten your seat belts."

As we were finishing dinner a forward tilt of the plane indicated we were decreasing altitude. A lighthouse flashed in the distance and we could discern a stretch of dark green water in the twilight of northern Newfoundland. The lights of a runway raced towards us and the wheels gently but firmly pressed hard on the terra firma of Gander Field at eight-nineteen o'clock.

The weather was cool in Gander with gusts of cold wind sweeping between the hangars. In the dusk we saw little of the airport, opened in 1938 for regular trans-Atlantic service. Activities seemed concentrated on our airplane. Gasoline was pumped into the tanks from two trucks one under each wing, and an oil truck contributed its quota for lubricant. Members of a ground crew unscrewed the floors of the engine casings and poked their heads inside to inspect; a pilot walked about on top with a flashlight.

We went into the large waiting room to look at Indian rugs, shoes, mittens and other artifacts on exhibit.

When we took off again at nine-twenty-seven, the stewardess announced that the estimated flying time to Shannon Air Port was six hours and twenty minutes. A full moon behind the clouds cast a pale glimmer in which the starboard wing of the clipper appeared as a great black specter sailing thru the night. When we

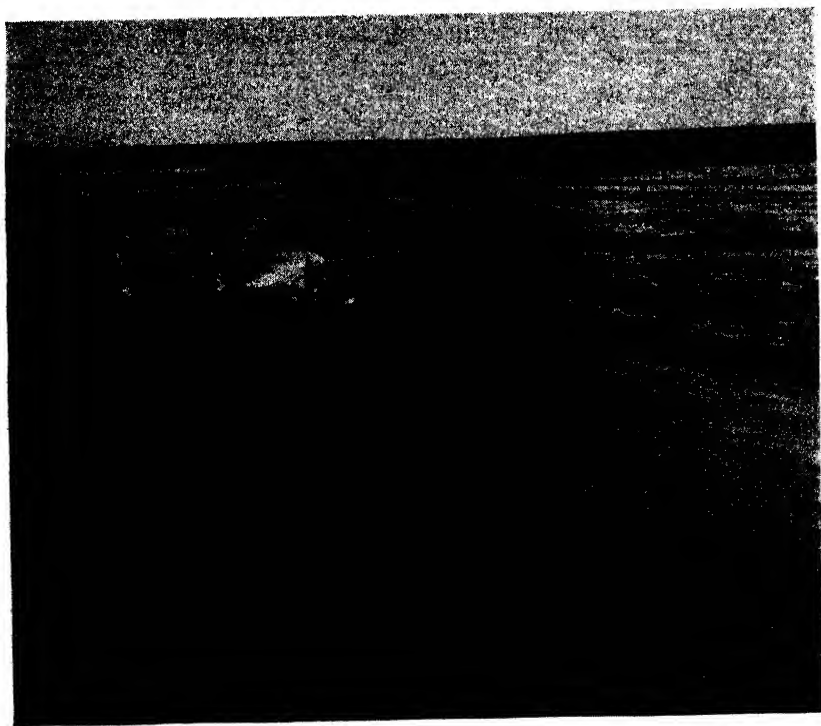


FIG. 2. Airport, Gander, Newfoundland. Clipper taxiing to runway for takeoff. Courtesy, Pan American Airways.

climbed higher, the moon's full brilliance was reflected from the fuselage and its double was cast in the tops of the clouds below. The lights in the cabin were dimmed, passengers tilted their chairs to reclining positions, and the only sound was the continuous whirr of propellers.

My thoughts turned on the medium of transportation which seemed to annihilate time and space. I first crossed the Atlantic

Ocean in the *Lusitania* in six days and now the same journey was being accomplished in less than twelve hours by my watch, keeping New York time until we reached our destination. Our Lockheed Constellation was ninety-five feet long, had a wingspread of one hundred-twenty-three feet and weighed forty-five tons. The cabin, painted grey, had forty-two low seats, arranged in pairs on



FIG. 3. Cirrus and strato-cumulus cloud formations photographed from Clipper over the North Atlantic. Note the little streamers at the wing tip for dissipating static electricity. Courtesy, Pan American Airways.

each side of the aisle, all covered with antimacassars. On racks below the curved roof were hats, small bags, pillows and blankets. The rows of windows along each side looked exactly like port holes.

The route mileage from New York to Gander, along a series of chords to the great circle was 1,020 nautical miles (1174.5 statute) and from Gander to Shannon 1,716 (1,976 statute), a total of 2,736 nautical or 3,150 statute miles. Latitudes and longitudes from the *Times Atlas* are: New York $40^{\circ} 43' N$, $74^{\circ} 1' W$; Gander $49^{\circ} 20' N$, $54^{\circ} 25' W$; Shannon $52^{\circ} 41' N$, $8^{\circ} 58' W$. The great circle

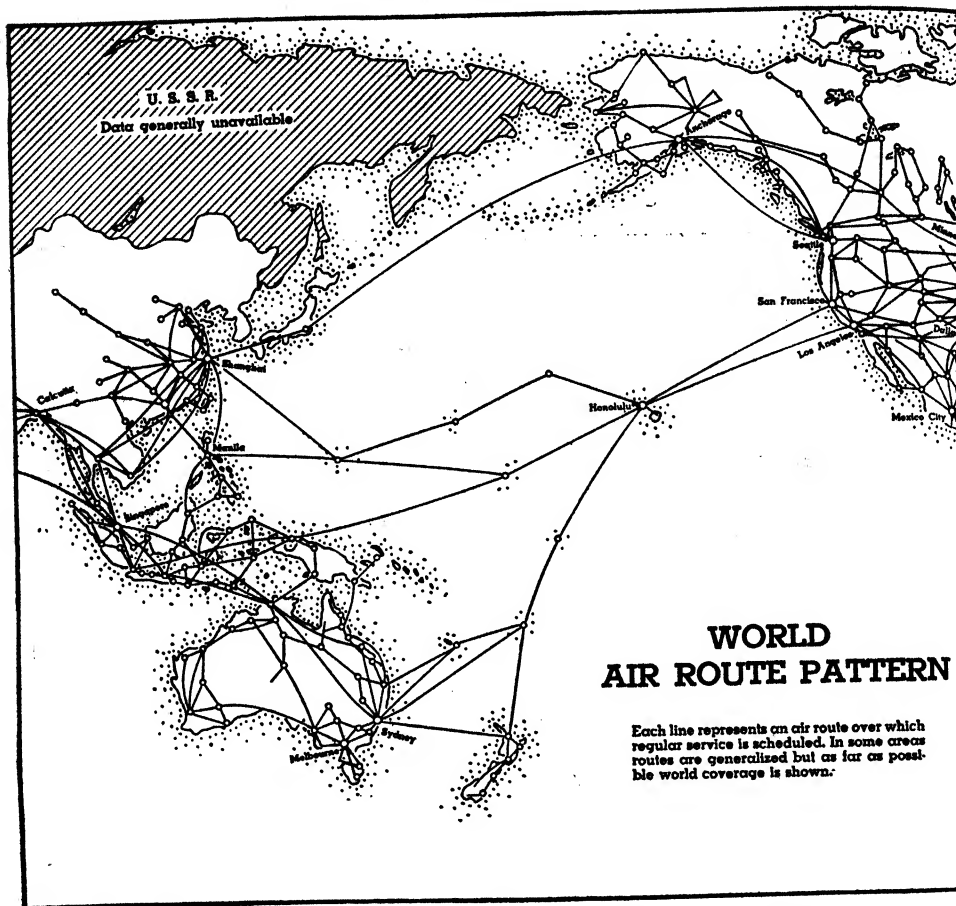
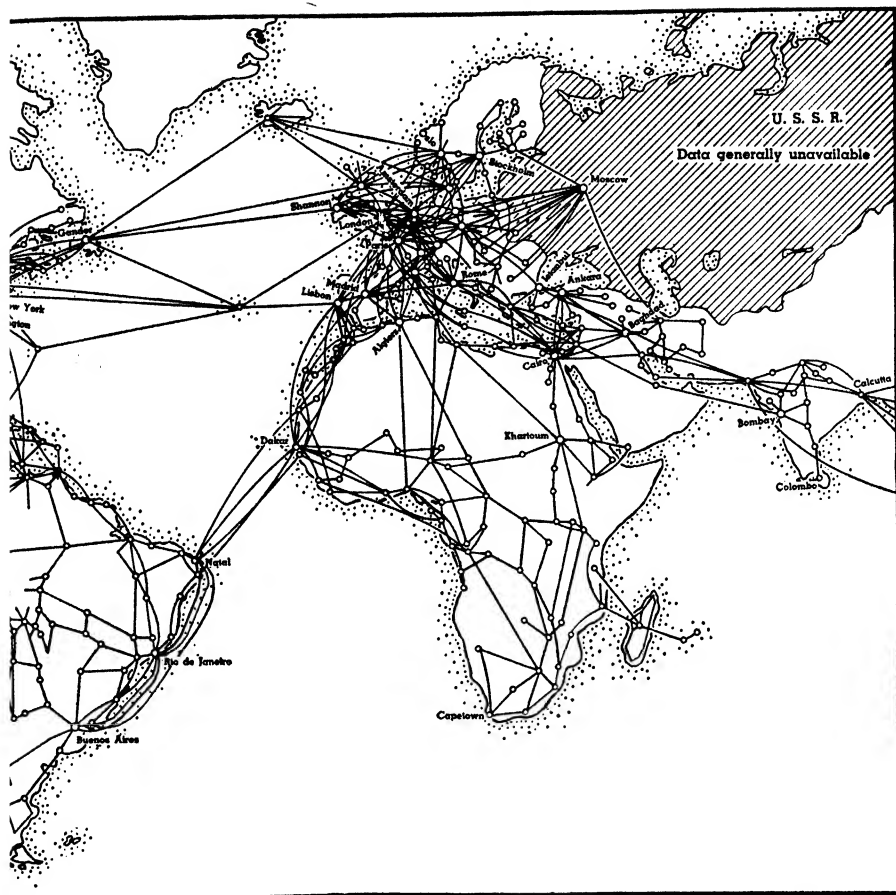


Fig. 4. The accompanying map shows world air routes in July, 1947. For lines where schedules for that month were unobtainable, the latest data available were used.

On this map it is impossible to show itineraries exactly, and to distinguish between airlines. For the United States and western Europe only trunk lines are plotted, and they are generalized. Where two or more lines coincide, one line on the map represents all of them.

Except for ice-bound Antarctica, every continent has an impressive network. The Pacific and the Atlantic oceans are spanned in several places, and the Caribbean, Mediterranean, and Java seas are crisscrossed by routes. Note that a line follows the valley of the Amazon, reaching almost all the way across that part of South America; the Sahara is crossed in five places; and air lines penetrate the interior of China much farther than railroads.



Commercial airplanes do not fly over the North Pole, the shortest distance between places in North America and Eurasia. Some air age enthusiasts predicted that in the postwar world we would see them take off from San Francisco, Kansas City, Chicago, and New York to fly over the Arctic to Stockholm, Rome, Moscow, Istanbul, Bombay and Chungking. Altho saving great distances, commercial flying that way will be in the distant future; for air lines, like railways, do business with big cities and dense populations. A carrier from New York to Bombay would not operate profitably flying over the Pole and making its destination the only stop. However, if it takes passengers or freight or both between New York, Paris, Rome, Cairo, Dhahran in Arabia and Bombay, the line will pay. It will probably be a long time before intercontinental passengers can look down at the North Pole on their way from one hemisphere to another. (Courtesy, G. Etzel Percy)

mileage New York to Gander is 974 nautical miles, and Gander to Shannon 1,699 nautical miles.

I preferred not to sleep, and at one in the morning I saw a grey dawn begin to spread over the sky ahead. The port side of the clipper was soon tinted with golden rays for we were now trending southwards, and the moon disappeared low down away behind. The floor of clouds was thin and broken and far below I could see the great ocean. The wing of the plane was covered thinly with ice and there was hoar frost on the inside rim of the window. Several tiny streamers near the wing tip, like pieces of tape, which fluttered in the wind the evening before, were now frozen stiff. The purser told us we were at an altitude of 19,000 feet.

By breakfast time much of the cloud floor had disappeared, but we were still high above what remained. As we came nearer the coast of Ireland, a light land breeze piled up strato-cumulus with scattered puffy cumulus tops like white mountains. Our first glimpse of land was a low peninsula partly obscured by broken clouds. Little white houses appeared in a patchwork landscape of various shades of green with bits of black peat land here and there, all crossed by streaks of roads. The estuary of the Shannon loomed large as we came down to circle the landing field and stop at three-forty-five by my watch, eight-forty-five local Irish time (daylight saving). The total flying time from New York was ten hours and twenty-two minutes.

TIME-PLACE RELATIONSHIPS

The speed with which the Atlantic Ocean and other areas in the world are now traversed by men and goods has reemphasized for geography the factor of relativity in time-place relationships. That factor became important when man could sail a boat instead of piloting a log, and again when trains and automobiles superseded oxen and horses. It came to the fore the last time on December 17, 1903 at Kitty Hawk, North Carolina, when Orville Wright made the first airplane flight in history.

Aircraft differ from other forms of transportation in that they can travel equally well over both land and sea. Columbus' ships could visit any port where modern steamers berth, but neither could travel over land. The mule train can go places to which the streamlined train can go, but neither can travel over the ocean.

Land travel by airplane is more important in countries of

great area like the United States and Russia than in small states like those of western Europe. Hauling freight by air has been one of the faster-growing businesses in the United States, where some aspects of aviation have been more highly developed than in any other country in the world. Some strato-freighters, carrying



FIG. 5. View of Irish terrain taken from Clipper. Courtesy, Pan American Airways.

twenty-ton pay loads, fly 1,550 miles at cruising speeds of 290 miles per hour. The Government of the United States recognized the importance of air transport when, in May 1946, the 79th Congress passed the Federal Airport Act which authorizes annual appropriations for the construction or improvement of public airports amounting in the aggregate to \$500,000,000.

There are no great distances within the limits of the majority of European countries; hence no especial need domestically for such speed as the airplane alone can provide. On the other hand the English Channel, the North Sea and the mountain ranges of south-

ern Europe penalize the surface carrier more heavily than the air line, and the political barriers of international frontiers generally offer greater delays to surface traffic than to air transport. The fact that in Europe few important airlines could be established within the confines of a single nation made impracticable any continent wide program of airway lighting or uniform aids to aerial navigation. As a consequence, few air routes in Europe were flown at night until a short time before World War Two began, in 1939, and even at that time the large majority of European airline operations were still on a daytime basis.

In the United States, where time in transit is measured not so much in terms of absolute hours as in business hours, air transportation has faced severe competition from land transportation. Air line traffic has been developed almost entirely at the expense of surface transportation. An important phase of future operations is the development of air-rail service whereby air lines and railroads may work together in a co-ordinated system. In both the United States and Europe railroads have accepted in principle the idea that the faster vehicle might be of the greatest value in reducing operating costs, not as a competitor but as a supplementary carrier. If the railroads could succeed in removing from their rights-of-way all fast trains, no small part of the maintenance costs would be eliminated because fast traffic requires much more repair, supervision and greater safeguards. If the railways and existing air lines could join, rearranging schedules, locating terminal and transfer facilities, training personnel and generally paving the way for a completely equipped air-rail service, the cause of transport would be improved. Linking together all communications within the boundaries of the United States would result in uniting all the communities within the country with benefit to the entire population.

In Africa, Asia, Latin America, and Australia, where transportation, before the coming of air carriers, was not as highly developed as in Europe and in the United States, the transport plane has revolutionized traffic. Air communications are opening up enormous areas for an entirely new technical civilization and for markets which promise considerable growth. The interior of Brazil, the 4,000 mile long Amazon basin, and the mountainous uplands in which its tributaries rise, formerly almost unreachable, are now easily accessible by airplane. In some countries a flight

of less than a day can be substituted for a long and arduous surface journey consuming many days. In China, Colombia, Alaska and New Guinea, flights which take less than a single daylight span replace land journeys of from two to seven weeks.

POLITICAL, SOCIAL AND MILITARY ASPECTS

Speed of transportation is important not only in the realm of trade and commerce, but in politics, social, and military affairs. In Europe, air lines first established mainly between the various

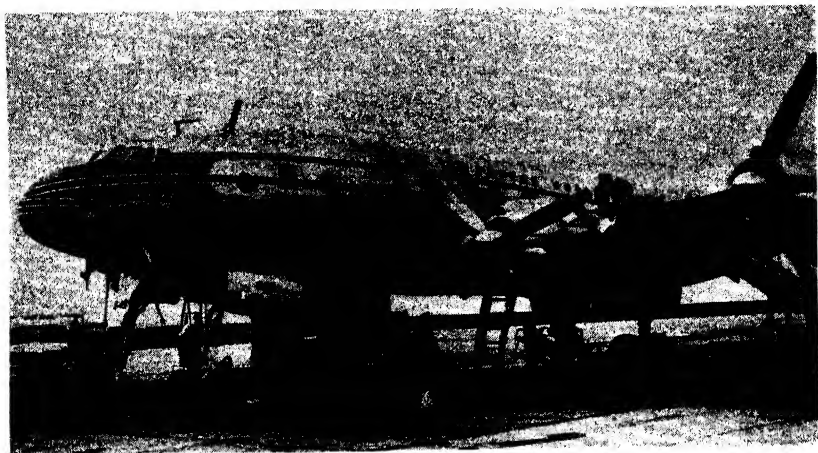


FIG. 6. Clipper Eclipse just after landing at Shannon Airport, Eire.
(Photo by J. W. Coulter)

national capitals, facilitated the transportation of diplomatic personnel and correspondence. The Fascist policy in Italy was to create air highways for exactly the same purpose as the Roman roads were built, to facilitate communications of a political nature. Air transport is speeding up the development of political self-assertion of dependent peoples in Asia and Africa.

Air travel has introduced a speed factor into war in that planes which can reach the enemy the quickest give their side a great advantage. French lines operating thruout Europe, across the Mediterranean to Africa and in South America, by connecting with steamship service between French Africa and Brazil, were designed primarily to maintain a great reserve force for the French defensive establishments. Air war is far more rapid in its tempo than the fighting known in other wars when mule carts, trains

and auto-trucks were the most important means of transportation. Time has been sharply reduced from years and months to days and hours when modern air power is utilized in military operations. Army aviation at the beginning of World War Two abruptly emerged from its preliminary stages where it served as either the arm of Intelligence, or as a protective barrage, and developed rapidly into flying artillery, as used in Spain and Poland, and in other theaters of operation as the spear-head of attack by mechanized ground forces. Enemy planes can appear, attack, and be out of sight in less than a minute.

Military air power presents some of the more pressing and inescapable problems of modern state craft. It has changed the political relationships between states so as to put the peacefully inclined and the militarily careless at a great disadvantage in a war of survival. There are no longer conventional fronts where air war is involved. The security both of distance and buffer states has gone since air attack can come thru the stratosphere without regard to intervening neutral or belligerent territory. Russia is making a strong bid for the world's military air power. In its 1948 program it plans to have more personnel at work on guided missiles and long range aircraft than the United States and Great Britain combined. Air power has made the social problems of war itself highly urgent. Concentrated on cities, as it will be in the future, air war results in a high degree of social disintegration regardless of its outcome in terms of victory or defeat.

Notwithstanding the great changes which air transport is bringing about on land, trans-oceanic air routes are more dramatic. With the length of non-stop stages far beyond anything in comparison to similar transport over land, the airplane engaged in transport above an ocean has every opportunity to demonstrate its great speed to the fullest advantage. The trans-Pacific service of Pan American Airways from San Francisco to China via Honolulu, Midway Islands, Wake, Guam and Manila, 8000 miles, is by far the longest over-water airways path in the world. It has made possible the movement of mail, passengers and express across the Pacific in four days as against the weeks which were required by steamships. The north-Atlantic air route, however, is the most important over-water path, for it connects two parts of the world between which trade and commerce have been most largely developed. In 1946 on the north-Atlantic route ten airplane com-

panies representing eight nations made an average of eight daily round trip schedules between North America and Europe. The three United States lines flying the Atlantic link the United States by air with the principal centers of Europe, North Africa, the Middle-East and India. The trans-Atlantic route crosses an ocean between millions who speak the same language and between whom, therefore, travel is encouraged. It links two great English-speaking democracies.

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POSTAGE STAMPS AS VISUAL AID MATERIAL IN THE TEACHING OF GEOGRAPHY

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Now that geography is finding itself more and more in the curricula of colleges and high schools the inevitable question of and desire for visual aid materials becomes apparent. Some of our better textbooks can be difficult in subtle ways and tho many of our geographical magazines are pictorial, few of them are read in their entirety by non-college students for the factual information they contain.

The teacher of geography is, therefore, confronted with the problem of (1) trying to acquire suitable visual aid materials thru the institution where he works, and (2) stimulating students to find their own materials. In the former problem the customary "red tape" of filling out order blanks and passing them on to be approved and then sending them to the supply houses, takes so long in some cases for the requisitioned material to reach the classroom that lesson plans usually have to be revised thus aborting a fine pedagogical opportunity. It is with the latter problem that this report specifically treats.

Ever since the United States government adopted the adhesive postage stamp in 1847, a wealth of teaching material on Americana has been made available. Attention is called to the Parcel Post Issue of stamps of 1912-13. This is a series consisting of twelve stamps of the following denominations and descriptions: one-cent

stamp shows a postal employee sorting mail; two-cent stamp shows a mail carrier delivering mail; three-cent, a railway postal clerk receiving mail while the train is in motion; four-cent, a rural mail carrier. This is a horse-drawn wagon resembling the milk delivery wagon of a decade or two ago. A mail train is pictured on the five-cent stamp; a steamship and mail tender on the ten-cent; an automobile delivery truck (year of 1912) on the fifteen-cent; an airplane, a slight improvement over the original Wright Brothers plane, is on the twenty-cent; and a view of a manufacturing plant on the twenty-five cent. The three remaining stamps in this series are agricultural in picture, the fifty-cent stamp showing some fine dairy cows; the seventy-five-cent showing a harvesting machine at work; and the one-dollar stamp showing men on ladders picking fruit from fruit trees. The use of the last four stamps would admirably illustrate a phase of America's economic activity.

The Lindbergh air mail stamp of 1927 not only shows a picture of the famous "Spirit of St. Louis" but in the background the northeastern coast of North America and the northwestern coast of Europe are shown with a dotted line indicating Lindbergh's route from New York to Paris.

A view of a canal on the Ohio River with surrounding scenery has been pictured on the *Ohio River Canalization* commemorative stamp of 1929.

A beautiful white and blue stamp showing the western hemisphere and (in dotted lines) the various global expeditions of Admiral Richard E. Byrd is pictured on the Little America stamp, titled, *Byrd Antarctic Expedition II*. This stamp was issued in 1933 and is getting to be somewhat of a collector's item.

The seventh heaven of delight for the teacher of geography in planning a unit on mountains can be found in the *National Parks* issue of 1934. The following is a description of the ten stamps in this series: one-cent shows a view of Yosemite National Park and the famous El Capitan; the two-cent is a view of the Grand Canyon showing the temples of Deva, Brahma, and Zoroaster, and Bright Angel Canyon; Mount Rainier and Mirror Lake are pictured on the three-cent stamp; a view of the "Cliff Palace" ruins of the prehistoric cliff dwellers, is shown on the four-cent Mesa Verde stamp; "Old Faithful" geyser is erupting on the five-cent Yellowstone Park stamp. Crater Lake and Wizard Island are shown on the six-cent stamp; the rocky promontory, Great Head of Acadia

National Park, is on the seven-cent stamp. The "Great White Throne" of Zion National Park; Mt. Rockwell of Glacier National Park; and Mt. LeConte of the Great Smoky Mountains are on the eight, nine, and ten-cent stamps respectively.

The picture of Boulder Dam has been placed on a three-cent stamp issued in 1935 commemorating the completion of that dam.

The *Territorial Series*, issued in 1937, is a set of four three-cent stamps showing the following: a picture of King Kamehameha I. (who placed the Hawaiian Islands under a single sovereignty); Mt. McKinley and the development of Alaska; the Governor's Palace of Puerto Rico known as "La Fortaleza"; and a view of the city of Charlotte Amalie of the United States Virgin Islands.

In 1939 a commemorative stamp was issued on the occasion of the twenty-fifth anniversary of the opening of the Panama Canal. The completion of the first transcontinental railroad in America has been pictured on a stamp issued in 1944. Also in the same year the one-hundred twenty-fifth anniversary of the sailing of the steamship *Savannah*, the first steam-propelled vessel to cross the Atlantic, has been honored with a suitable stamp.

In commemoration of the final resistance of the United States and Philippine defenders on Corregidor, a picture of the island has been reproduced on a stamp, issued in 1944. A unit on transportation in addition to the above-mentioned postal issues, could also include the French stamp showing the liner *Normandie* and Russian, Japanese, and Djibouti stamps showing railroad locomotives.

One of the finest sets of stamps picturing geographical exploration is the Spanish issue commemorating the voyage of Columbus to the New World. The outstanding features of this set are the large triangularly-shaped stamps showing the *Nina*, *Pinta*, and *Santa Maria*.

Maps of various countries have been pictured on many stamps and the following are some good examples: a map of South America is on an Argentina stamp, issued in 1937; a map of Bolivia is on a Bolivian stamp of 1935; a relief map of Brazil is on a stamp of that country issued in 1940; the isle of Cuba is pictured on a Cuban stamp of 1940; the Dominican Republic, in 1938, issued a stamp showing the map of the western hemisphere; and Liberia has featured the map of Africa on a stamp issued in 1928.

Scenes from great cities of the world are shown on stamps. Some interesting examples are: the Harbor of Antwerp on a Belgian stamp of 1929; Buildings of Parliament at Ottawa on a Canadian stamp of 1933; the Eiffel Tower on a French stamp of 1939; and the *Graf Zeppelin Issue* of Italy of 1933. The stamps of the latter issue show the dirigible flying over a stadium, castle, and bridge of St. Angelo, the Roman Forum, etc.

The above examples are but a sampling of the wealth of material that can be had from postage stamps. Tho this article in no way tries to lobby for a hobby yet many persons have collections valued up to \$10,000 and \$100,000. Under the administration of the late Franklin D. Roosevelt, he himself, an avid philatelist, many interesting stamps were issued of not only a geographical nature, but an historical one as well. The complete list and description of the many issues can be found in *A Description of United States Postage Stamps 1847-1947*.*

Thus the teacher of geography has at his command a wealth of subject matter and visual aid material to supplement practically any phase of geography that he may be called upon to teach. *Scott's Annual Stamp Catalogue* and monthly stamp magazines are available to consult for information on the latest stamp issues.

* Post Office Department, Washington.

THE NATIONAL COUNCIL AT WORK

HIGH POINTS OF ELEMENTARY EDUCATION CONFERENCE

Dr. Norman Carls, Coordinator for the National Council in Washington, D.C., attended the Conference of Leaders in Elementary Education held in Washington, D.C., May 20-22, 1948. National Council members interested in the results of this conference should write to Office of Education, Federal Security Agency, for Report of Second Conference of Leaders in Elementary Education.

The following points prepared by Dr. Carls either have direct bearing on the work of the National Council or suggest additional activities which we might undertake:

1. It was emphasized in several discussions that representatives of the various national organizations occasionally have been invited to actively participate in planning educational programs at the local level (and at state level), and that this practice should become far more common than at present.

2. Underlying the whole conference was the expressed need for harmonizing the objectives and efforts of the "child development specialists" with the objectives and efforts of the "subject matter specialists." This was suggested as a topic for special treatment in the next annual conference.

3. Organizations were commended for cooperative efforts. This of course includes our various activities undertaken cooperatively with the National Council for the Social Studies. It might be recommended that our National Council give full consideration to methods of working cooperatively with organizations primarily concerned with "child development."

4. Heavy emphasis was placed on education closely related to the life of the community. In this connection it was emphasized that local groups of teachers must make inventories of community educational resources.

5. Education of elementary school children in out-of-school hours was an important interest of nearly every delegate at the conference. Need was expressed for educational guidance made available to non-school organizations interested in the out-of-school activities of children, such as the Boy Scout organization.

LISTS AND BIBLIOGRAPHIES ON MOTION PICTURES FOR GEOGRAPHY

Members of the committee are: Miss Thelma Waddle, Board of Education, Pittsburgh, Pennsylvania, Chairman; Dr. E. E. Hall, Mississippi Southern College, Hattiesburg, Mississippi, Secretary; and Miss Lavina H. Henderson, 711 Chautauqua Street, Pittsburgh, Pennsylvania.

GEOGRAPHY IN THE HIGH SCHOOL

Miss Melvina Svec, Chairman of the Publications Committee, is highly pleased with the rapid progress being made on the volume—*Geography in the High School*. Watch for an announcement concerning its publication by McKnight and McKnight. *Geography in the High School* will contain a mine of information and is the second volume to be added to the Geographic Education Series since the Second World War started. During the war, *Map Reading* by Elaine Forsyth was added to this series. For details concerning the Geographic Education Series, see full page advertisement in the September JOURNAL OF GEOGRAPHY.

NOMINATING COMMITTEE

The following people constitute our Nominating Committee: Dr. Katheryne Thomas Whittemore, State Teachers College, Buffalo, Chairman; Dr. George J. Miller, Indiana University; and Dr. Zoe Thralls, University of Pittsburgh.

THOMAS F. BARTON, *President*

EDITORIAL NOTES AND NEWS

The joint meeting of the Association of American Geographers and the American Society for Professional Geographers will be held at the University of Wisconsin, December 27-30, 1948. The Lorraine Hotel will be headquarters. Room reservations should be made at an early date. Meetings will be held in the Student Union Building where arrangements have also been made for either cafeteria or buffet service, breakfast and luncheons. Abundant space has been provided for exhibit purposes in the large lounge room and along the hallway connecting the lounge room with the auditorium in the Student Union Building. Invitation is extended for exhibits by commercial companies, government agencies, educational institutes, and others who might have exhibits of professional interest. All exhibit material should be dispatched, well in advance, to Dr. Arch C. Gerlach, Science Hall, University of Wisconsin, Madison 6, Wisconsin. These exhibits should be marked clearly for attention of the Exhibitor.

We are frequently asked concerning films suitable for economic geography. We, therefore, want to take this opportunity to repeat that many excellent films are available from the United States Bureau of Mines. For example, two recent films are entitled *The Story of Gasoline*, and *California and Its Natural Resources*. For detailed information on how to obtain these films address Geographic Services Section, U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pennsylvania.

Other excellent films may be obtained from The Motion Picture Service, Office of Information, U. S. Department of Agriculture, Washington, D. C. Among the many available are the following titles: *Erosion*; *Soil and Water Conservation*; *Top Soil*; *Water*; *Then It Happened*. The title of the last named does not give very much information concerning the character of the film. However, it deals with the very destructive forest fire in the state of Maine.

Tanganyika is to have a pipe line extending 150 miles inland. It will extend from Mtwara to the new Ground Nuts Area being developed by the British Government. The line will carry gasoline and gas oil for use in agricultural implements, bulldozers, and transportation vehicles. It will have a capacity of between 120,000 and 180,000 tons annually. Approximately 25 miles have been completed. Port facilities will also have to be built.

The Canadian Government has officially established the "Canadian Board on Geographical Names." This new board takes the place of the former "Geographical Board of Canada." The Secretary of the new board is Mr. L. B. Skinner, Canadian Board on Geographical Names, Department of Mines and Resources, Ottawa, Canada. It is interesting to note that "The Board shall decide on questions of geographical nomenclature affecting Canada, and all questions which arise in the Departments of the public service respecting Canadian and foreign geographical names shall be referred to the said Board."

It is anticipated that Liberia will assume increased importance as a source of raw materials now that the U. S. Navy has made Monrovia a modern port. Twenty millions is reported spent on this development. Rubber shipments out of this port will probably total 30,000 tons this year, produced on the Firestone rubber plantation at Harbel, Liberia. But there is more than rubber in Liberia. One company—the Liberia Company—has been granted an eighty-year concession to explore Liberia's natural resources. This company is backed by a group headed by the well-known former steel executive, Edward R. Stettinius, Jr. Shipping companies are alerted to the anticipated U. S.-African trade

and are not only interested in trans-Atlantic shipping but in small-draft craft for coast-wise and inland pickups which can be reassembled at a port like Monrovia. That the world learned a lot about Africa in the last war is increasingly evident. Indicative of this awakened interest are the power developments the British are making in South Africa, the huge soybean plantations being developed there, and the possible finding of radioactive minerals near the gold mines of Johannesburg similar to those of the Belgian Congo which were the source of much of the uranium ores used by us in the development of the atomic bomb. Naturally the development of these African resources all stimulate increased interest in Liberia.

Brazil has very extensive deposits of monazite in the coastal sands of Bahia and Espiritu Santo and in the Rio Doce Valley. Monazite is a complex mineral from which a number of valuable products can be derived, each essential in a variety of industrial processes. Monazite is getting added attention these days because it contains thorium so significant in the rapidly expanding field of atomic fission. Brazil is now in a position to further research in the use of thorium since the arrival of a very powerful betatron at the nuclear energy research institute in Sao Paulo. The research will be under the direction of the University of Sao Paulo. The Rockefeller Foundation is reported to have contributed one and a half million dollars toward the research program.

Globes are assuming more and more significance as an aid to visualizing world-wide news as related to routes. One such route is that from New York to the Lagens airport on one of the Azores where the United States has military base rights. This base is about 2,400 miles east and a little south of New York. It is almost equally far from this base to the air base near Tripoli in North Africa, recently reopened by the United States. Another news item which gets added meaning when viewed on the globe is the arc along which the May solar eclipse is visible, weather permitting. This path extends some five thousand miles from Burma to the Aleutians. Due to the International Date Line cutting across this arc, the eclipse will be dated May 9, in Burma, Siam, China, Korea, and Japan, but it will be May 8 in the Aleutians.

DR. KARL VEE STEEG, Chairman of the Department of Geology and Geography of the College of Wooster, Wooster, Ohio, was honored for his many years of service to the College, at Wooster, May 7 to 9. Included in the celebration is a program, under the direction of Dr. Paul Shafer of the University of Illinois, which will deal with the place of geology and geography in the liberal arts college. Another program, arranged by Dr. H. T. U. Smith of the University of Kansas, will present research papers contributed by former students of Dr. Steeg. The dinner program will feature congratulatory messages from professional colleagues, institutions, and widely-scattered former students.

One of the interesting and fascinating developments in the oil industry is the search for petroleum on the continental shelf. Roughly the entire continental shelf of the United States contains approximately 84,500,000 acres. Much of it is potential oil area. Approximately 3,300,000 acres have already been leased along the coast of Texas, Louisiana and Florida. Some of the claims along the coast of Louisiana and Texas extend thirty-one or more miles from the coast line. These efforts to find oil on the continental shelf are proceeding at a very rapid pace. Last June more than twenty drilling locations were in various stages of development. Only a few have thus far

produced oil but many salt domes have been located definitely. Geophysical exploration is being carried out extensively along the whole Gulf Coast of the United States.

The Ohio Council of Geography Teachers held a meeting in Barberton, Ohio, in May. Featured on the program was a report on the ceramics industry of Sebring, Ohio, by Joy Stover; a paper on the grade levels of geography in the elementary grades, by Evelyn Weston; and a paper on Inhuman Geography, by Dr. H. F. Raup of Kent State University. Dr. Raup was re-elected president of the Council; Mr. Lyle Fletcher of Bowling Green State University was elected vice-president, and Villa Smith of Cleveland was elected secretary-treasurer. The afternoon was devoted to a field inspection of the industry complex of Barberton, under the direction of Walter Crewson, superintendent of schools in Barberton.

It is reported that about 17,000 barrels of crude petroleum will be delivered daily to a refinery in New Jersey from Saudi Arabia, Iran, and Kuwait. During 1949 this will be gradually stepped up to 40,000 barrels. Saudi Arabian crude has been coming here since July, 1947, when the first trial run was made. Since it requires about thirty days for a tanker on the Persian Gulf to get loaded, cross to America, and then unloaded, it is apparent that the oil companies expect the unprecedented demand for oil to continue. The significance of oil in the Middle East is brought out in recent reports which indicate that Kuwait's daily production of petroleum is soon expected to reach 400,000 barrels; that of Saudi Arabia, 300,000 barrels; and that of Bahrein Island, 28,000 barrels. Qatar, too, is in the limelight as well as being opened in that independent shiekdom on the Persian Gulf. Refined products made in the United States from Middle East crude will be marketed in New York, New England, and the Middle Atlantic states.

The Antofagasta-Salta railroad which was opened officially in 1948, was envisioned in 1905. Work on it started in 1921. It is a meter-gauge railway. The roadbed thru Argentina is reported to be 571 Kilometers long, and that thru Chile is 330 miles long.

The United States imports of spices in 1947 totaled \$27.5 million. Black pepper headed the list of 31 varieties of spices and was valued at \$13 million. Whole mustard seed ranked second in value.

The California Council of Geography Teachers, affiliate of the National Council of Geography Teachers, last spring initiated the publication of a *Geography News Letter*, edited by Lauren C. Post, Los Angeles City College. Mr. Post is Secretary-Treasurer of the Council, while Walter Hacker, San Francisco State College is President, and Arthur Carthew, Los Angeles City College is Vice-president. The publication featured news pertaining to course offerings in geography, student enrollment, and staff personnel during the last spring quarter; and also the offerings for the past summer. One of these summer offerings of unusual interest was the course entitled, Air-Age Geographic and Geologic Field Studies offered by V. Calvon McKim of Fresno State College. Airplanes and boats were scheduled to convey the students to the centers to be studied. The second annual meeting of the Council was scheduled to be held June 26, at the University of California.

The twenty-third Annual Meeting of The New England Geographical Conference was held at Wellesley College, Wellesley, Massachusetts on May 8, 1948. The morning program was devoted to a symposium on Focus on the Orient. The papers presented were: "Water Transportation and the Food Supply of Shanghai," Rhoads Murphy, Harvard Graduate School; "Land Utilization in Formosa," Ross Machay, McGill University and "Some Land Use and Tenure Problems in Sumatra," Karl J. Pelzer, Yale University. In the afternoon two sectional meetings were held on the discussion topic "Movies in Teaching Geography." Ada M. Shawkey, Graduate School, Clark University served as discussion leader for the Primary and Secondary Level section and Minnie E. Lemaire, Mt. Holyoke College was discussion leader for the College Level section. Films were shown before the discussions.

GEOGRAPHICAL PUBLICATIONS

Sidman P. Poole, Thomas F. Barton, and Clara Belle Baker. **Geography Foundation Series—Through the Day.** 124 pp. \$1.28, **From Season to Season.** 156 pp. \$1.44, **In Country and City.** 218 pp. \$1.96. Bobbs-Merrill Company, New York. 1947.

This *Geography Foundation Series* will receive a hearty welcome from numerous primary teachers who have been seriously inquiring about what they can do to prepare children for geography in the intermediate grades.

These books are attractive and usable. They are printed on good quality paper in clear type, and are well bound and of convenient size. They are well illustrated—first two books in colors—while the third grade book has black and white halftones as well as some pictures in colors. Each short unit of material is followed by a few questions and the grade book has several pages entitled "Your Work Page."

The textual material is well written and carefully graded. Provision is made for establishing concepts thru repetition in two or more of the books. This is in good keeping with interests of small children and effective teaching.

That critical editing was done is evidenced by the fact that in the three books one might question less than a half dozen statements, e.g., in the third grade book—*In Country and City*, "deep clay" probably a misprint; p. 57 "put out some pumpkins" is ambiguous; p. 155 "They are made from the sap of a tree called the rubber tree."

Not only will primary teachers appreciate having this "tailor made" material, but intermediate teachers will be pleased to have children bring to the study of geography a much better background which would enable them to enjoy the study of geography. A concept chart as well as a manual is furnished to teachers using these books.

ANNA C. LARSON

State Teachers College, St. Cloud, Minnesota

Report of The China-United States Agricultural Mission. 265 pp. Office of Foreign Agricultural Relations, U.S.D.A., Washington, D.C. May, 1947.

This report was prepared by a joint commission dealing with the agricultural situation in China. Ten experts from the United States joined with a similar group of Chinese experts for the study of the country's agricultural production and potential. The commission traveled thruout the fourteen provinces of China. The commission seems to be somewhat optimistic concerning the possibility of increasing the agricultural output of China. The volume describes present production and suggests methods for improvement of agriculture. From the field observations the commission, "is fully convinced that agricultural production in China can be greatly increased by the application of modern

scientific knowledge to the improvement of soils, crops, livestock, and farm equipment. It also believes that the income of farmers can be greatly enhanced and the present poverty of many rural communities reduced by improvements in land tenancy, farm credit, and agricultural marketing." Geographers will regret the lack of any apparent comprehensive view of a given area. However, secondary and college teachers will find a large amount of material of great value in their work on China.

J. W. Diffor and M. F. Horkheimer. *Educators Guide to Free Films*. 345 pp. Educators Progress Service, Randolph, Wisconsin. 1948. \$5.00.

The *Educators Guide to Free Films* is an excellent source of information concerning films that may be obtained at little or no cost. In nearly all cases transportation charges must be paid by the school, but there is no charge for the use of the film. The new volume lists 1632 films, 29 per cent of which are new to this edition. It also lists 242 slide films. The volume is conveniently arranged by subject index, cross index, title index, source index, and can become easily usable by any teacher. The annotation describes the character of each film indicating clearly its usefulness for teaching purposes.

Lili Heimers. *Free Teaching Aids In 14 Subjects*. 53 pp. New Jersey State Teachers College, Upper Montclair, New Jersey. 1948. \$1.00.

As the title indicates this publication, in mimeographed form, covers a great variety of subjects. It is arranged in convenient form by topics so that reference material, for example, on agriculture may be readily located. A brief annotation indicates the probable value of the publication. The low charge for this publication indicates that it has been gotten out as a contribution to education. It must be noted that the one dollar charge must be sent with your order, as the college cannot keep accounts and serve you at such a low cost.

J. G. Fowlkes and D. A. Morgan. *Elementary Teachers Guide to Free Curriculum Materials*. 208 pp. Educators Progress Service, Randolph, Wisconsin. 1948. \$4.50.

The volume *Elementary Teachers Guide to Free Curriculum Materials* is by far the best publication of this type that has come to our attention. This volume, like the one on films, will be just as useful to secondary school teachers as it will to elementary teachers. The guide contains 1338 titles, 46 per cent of which are new in this edition of the volume. Different colored paper is used to emphasize the major divisions of the guide. Blue paper is used to give full information on each item by area and constitutes the major part of the volume. The yellow paper is used to show teacher resource material. This material may not be directly usable by the students, but will furnish highly valuable information to the teacher. Pink paper is used to show the title index and white paper is used to show the source index. An annotation is provided for each item. This gives the reader a concise statement of the value of the material offered. A great amount of highly valuable material may be accumulated by any school free of charge by making a careful selection from this volume.

Through China's Gateway, A series of five filmstrips: One, In the Chinese Manner; Two, China's Children; Three, Food for China; Four, A Nation of Scholars; Five, China's Tomorrow. Presented by The East and West Association, Commentaries by Pearl S. Buck. Available through Visual Workshop, Inc., 13 E. 37th St., New York 16, \$12.50 per set. \$2.50 each.

Film Strips are visual aids well suited to geographic instruction. They have the advantage of being easily handled and are relatively inexpensive. A teacher may spend as long or as short a time as he may wish on a single frame. Listed above are a set of five film strips on China which are well prepared for geographic teaching at all levels. Especially worthwhile are two: In the Chinese Manner and Food for China. These film strips were initially arranged by The East and West Association as a part of its educational program. Commentaries written by Pearl Buck accompany the set and may be used to advantage. Recordings of the commentary are available but are hardly necessary for class room use. The pictures are well chosen. They are well varied with beautiful landscapes and human-interest close-ups. They show China's best side, but that is to be expected. Some mistakes are made which geographers can quickly correct, for example the two supposed examples of "brown" North China are from South China. Two or three maps could have been inserted with telling effect. The commentary is written in simple flowing style that adds much, particularly for knitting the material together. Occasionally the comments are a little coy and gloss over painful realities. Each commentary booklet includes suggested discussion topics and reading lists. All in all the series are a very valued teaching aid. Geography teachers will welcome these film strips to aid them in giving their students some knowledge of China. After using them they will look for more series on other countries.

SHANNON McCUNE

Colgate University

H. H. Neuberger, F. B. Stephens. **Weather and Man.** Prentice-Hall, Inc. N.Y., 1948, 272 pages, \$3.75.

T. A. Blair. **Weather Elements.** Third Edition, Prentice-Hall, Inc. N.Y., 1948, 373 pages, \$5.65.

Weather and Man is a fairly non-technical discussion of, What is weather? and Why do we care? The chapters of the first part discuss atmospheric properties and processes, including air masses, circulation, forecasting. In Part II are some influences of the weather upon eight conditions or activities: health, agriculture, architecture, aviation, transportation, public utilities, the housewife, and business and industry. The discussions, while brief, are reliable and interesting. This book merits a place in supplementary reading for teachers of geography and for interested high school and college students.

The third edition of Blair's *Weather Elements* differs from the second, 1942 edition, chiefly in the addition of chapters on the characteristics of air masses and fronts, the relation of weather to aviation. Revisions have been made in the chapter on forecasting, giving increased attention to high altitude observations, partly by radar. Unfortunately, the price, already high, has been made almost excessive. Only fifty pages, of rather large type is devoted to climate.

STEPHEN S. VISHER

Indiana University

S. F. Nadel. **The Nuba.** 525 pp. Oxford University Press, New York. 1947. \$11.00.

A detailed and primarily anthropological study of several very primitive, small groups of Africans who live in the Nuba Mountains, Anglo-Egyptian Sudan. Their habitat includes 30,000 square miles of steep-sided plateau and intervening plain, in one of the most remote parts of Black Africa. The study brings to the geographer an intimate view of how these people occupy their land, the mode varying with the charac-

ter of the habitat and the stage of culture. Modifications of indigenous life as the groups have come into contact, first with Arabs, and latterly with British authority, demonstrate that the most inaccessible fastnesses of Africa are being fundamentally altered by outside contacts. This may startle those teachers of geography who fancy that African society is static.

Useful explanations are given of distinctive cultural practices (such as the paradox of unused cattle being maintained while their owners go hungry) that must be understood if African geography is to be properly studied.

Chapters 1-3 are exceptionally valuable to the geographer, but they are incomplete without the opening sections of later chapters that deal with location and site of the settlements and the fields. Chapter 12 summarizes the anthropology, but the geographer must make his own estimate of the geographic "trends and prospects."

DERWENT WHITTLESEY

Harvard University
May, 1948

Paul R. Hanna and Joseph E. Williams, **Global Geography: A Workbook in World Geography**. 35 lessons and 8 die-cut Supplementaries. 95 pages. Scott Foresman and Company, Chicago, 1948. For use with Grades 7 to 12. Single sets (Workbook and 8 Supplementaries) \$2.40 per set; a carton of ten sets \$20.00.

Global Geography: a Workbook in World Geography, consists of 35 laboratory exercises, designed to give the student an understanding of the nature and use of the globe and of various kinds of projections, by guiding him in the construction and study of the globe. The exercises are given in easy to follow directions, and deal with such subjects as: Projections, Distribution of Continents and Islands, Oceans, Seas, Gulfs and Bays, Rivers, Lakes and Inlands Seas, The Atmosphere, Climate, Natural Vegetation, Population, Resources, and Transportation, including Global Airways. Several Review Exercises are included. The exercises may be used with any textbook.

The new feature about the Workbook is the set of 8 die-cut Supplementary materials which accompanies each book. It is this equipment that makes it possible for each student to learn his geography in a laboratory situation, using cartography as a method of instruction.

By means of the Supplementary materials, *Global Geography* is designed to teach world geography as an active influence in the lives of people everywhere conditioning the way they live and to show their dependence upon each other. The Workbook lessons teach students to place on the hemisphere maps, the significant items which constitute world social, economic and political realities. It proves training in the use of globes and maps, as basic information in building understanding of the air world today.

While the Workbook is designed for use in Grades 7 to 12, it can be used profitably in such courses as Principles of Geography offered on the college level.

INA CULLOM ROBERTSON

State Teachers College, Valley City, North Dakota

J. Russell Smith and Frank E. Sorenson. **Our Neighbors at Home**. 250 pp., and **Neighbors Around the World**. 250 pp. The John C. Winston Company, Philadelphia. 1947.

In the first book, the various type communities pictured and described are about the farms and industries usually considered at third grade level. The stories of these communities are generalized.

In the second book, the various journeys and stories cover the usual fourth grade topics on the polar areas and then move equatorward over the various regions in sequence. A series of maps shows the location of the areas under discussion.

To be commended is the completeness of telling the seasonal story on the farm and other communities. The stories are interestingly told and the vocabulary appears well suited to the grade level. Another feature is the definition use of words and terms the first time they appear in the text. The index is combined with a glossary and pronunciations. The index will serve little use since thirty to forty pages are listed for some single topics. Most units close with an explanation of how goods are sold for money so that people can buy the things they do not make. Three kinds of exercises close each unit.

Both books make generous use of photographs and colored pictures. The second book adds sketches which lack scale and proportion. Both the colors and grotesque features of people detract from the first book. Some pictures lack captions or means of identification. Some captions are irrelevant and inaccurate, e.g.: "Why do ranchers send cattle and hogs to the Corn Belt to be fattened?" and "Crop rotation is practiced in each contour."

In an attempt to popularize content, a number of errors occur in the text. Development of details is not equally complete. Nothing is said about the height of hay yet the sentence reads, "After the cut grass has dried for several hours in the sun, we call it hay." The illustrations of our cotton belt show mules but the text tells only of horses and tractors.

Some strange mental images will probably result from such statements as:

"Millet is a kind of grain somewhat like oats."

"The caterpillar tractor has big feet."

"The builders of Coaltown have learned how to make very nice houses on these long narrow lots." (The colored picture contradicts this statement.)

"... to clean a codfish ... cut off the head. Next split open the fish. Then put it in a barrel and cover it with salt."

Attempts at being facetious are to be deplored. In a sketch showing a street scene, one sign reads: DR. PAYNE, Dentist. The rather common practice of having a hen hatch duck eggs is told as a "joke" on the hen.

Much emphasis is placed upon farmers sharing equipment and working back and forth on each other's farms. While this may be true to some degree, it happens in most every story. Children who are familiar with the home region will probably be critical of some of the parts telling about their type of community. However, they will be delighted with reading about the things in a community that is much like their own, and some will find an opportunity to make changes and additions in the book stories.

M. MELVINA SVEC

*State Teachers College
Oswego, New York*

Ralph H. Brown. *Historical Geography of the United States*. Harcourt, Brace and Co., New York, 1948. 596 pages, 147 illustrations and maps.

This excellent book is the last publication of an eminent geographer whose untimely death precludes further contributions which have always been welcome additions to geographic literature.

Historical Geography of the United States deals with the development of our country from the colonization period to the present. Particular attention is paid to the progressive economic changes which various regions have undergone, the bases on which industries of the past were built, the types of settlements and frontiers, and the

expansion of our nation from ocean to ocean. Dr. Brown describes conditions in the early English, French and Spanish settlements and then presents a view of the Atlantic seaboard and South in the first years of the Republic. Next he extends his study into the Ohio Valley and lower Great Lakes region to 1830. A section on the New Northwest describes the fur trade, mining industries and forest exploitations in upper Michigan, Wisconsin and Minnesota. Then follows the story of the Great Plains and Rocky Mountains with considerations of the trappers and buffalo hunters, the cattle empire the farming frontier and the mining development. The final part of the book discusses the Pacific Northwest, the Great Basin and California and the problems of their settlement and utilization of their resources.

The book is interestingly written and represents wide reading and scholarly analysis of source materials. There are many reproductions of old maps and contemporary drawings. The bibliography and index are usable and adequate. *Historical Geography of the United States* is both a useful textbook and valuable reference work. The reviewer finds much to praise and little to criticize except he wishes that more mention had been made of the geographic factors affecting routes of travel, locations of settlements and expansion of industries. The what, where and when of things are well treated but some students will regret that the explanations of the why of things sometimes seem inadequate.

OTIS W. FREEMAN

Specialist for Geography in Higher Education
Office of Education

NEW PUBLICATIONS

Calendario Atlante De Agostini. 499 pp. and separate maps. Institute Geografico De Agostini, Novara, Italy. 1948.

A compilation of statistical data along with 29 separate political maps and color reproductions of the flags of the nations.

Samuel Guy Inman and C. E. Castaneda. A History of Latin America for Schools. 442 pp. Illustrated. The Macmillan Co., N.Y. 1944. \$2.20.

Part I gives a preview of the social, racial, and geopolitical backgrounds of the Latin Americans. Part II surveys the early Indian cultures, the Colonial period, and the contributions made by various leaders and their followers in setting up an independent government for each republic. Part III analyzes the steps that lead to international developments. Part IV summarizes outstanding contributions made by Latin Americans to literature, art, and music. The appendix lists the outstanding events in Latin American history in chronological order and provides a list of source materials.

The United Nations. Department of State Publication 2885, United States—United Nations Information Series 22.

The United Nations for Peace and World Progress is a chart prepared by the State Department to show the general organization of the United Nations and how it functions. It should be of real aid in social studies classes. A copy may be obtained from the Group Relations Section, Division of Public Liaison, Department of State, Washington, D.C.

The Ports of Los Angeles and Long Beach, California. Port Series No. 28. Superintendent of Documents, Washington 25, D.C. 1947.

This is a new volume revised in 1946, of the long series of highly valuable reports on harbors of our country. It contains a vast amount of information for geography teachers, especially at the college and secondary level.

Richard Foster Flint. **Glacial Geology and the Pleistocene Epoch.** 589 pp. Illustrated. John Wiley & Sons, N.Y. 1947. \$6.00.

The volume deals particularly with the major facts of the Pleistocene Epoch. An effort is made to bring out the outstanding characteristics of the epoch and its glacial history. Geographers will probably be particularly interested in the effort of the author to reconstruct the history of the glacial epoch.

C. A. Cotton. **Geomorphology.** 505 pp. Illustrated. John Wiley & Sons, N.Y. 1946. \$6.00.

The scholarly work of Dr. Cotton of New Zealand is well displayed in the new edition of this volume which is an introduction to the study of land forms.

Henry Morgenthau, Jr. **Germany Is Our Problem.** 239 pp. Harper & Bros., N.Y. 1945. \$2.00.

All social studies teachers will be interested in this volume. We have heard much about the Morgenthau Plan and this little book sets it forth with clarity.

Wyatt Winton Belcher. **The Economic Rivalry Between St. Louis and Chicago 1850-1880.** 223 pp. Columbia University Press, N.Y. 1947. \$3.00.

The period between 1850 and 1880 is covered in this historical volume. The development of river transportation at St. Louis and railroad transportation at Chicago is described and evaluated, as is effects of the Civil War.

H. T. Stearns and G. A. Macdonald. **Geology and Ground-Water Resources of the Island of Hawaii.** Bulletin 9. 363 pp. Illustrated. U. S. Geological Survey, 333 Federal Bldg., Honolulu, Hawaii. 1946.

The geology and geography of the great volcanic area of Hawaii will certainly be appreciated by many geographical readers. The photographs are especially clear and interesting. There is also an extensive use of maps and diagrams.

Henry Dewey Thompson. **Fundamentals of Earth Science.** 450 pp. Illustrated. D. Appleton-Century Co., N.Y. 1947. \$3.75.

The volume is intended as a survey of earth science covering one semester. It is designed to give the basic body of information to beginning students who may continue their work in either geography or geology.

Alice Franklin Bryant. **The Sun Was Darkened.** 262 pp. Illustrated. Chapman & Grimes, Boston. 1947. \$3.00.

Mrs. Bryant has endeavored to portray conditions as they actually existed in the Philippines, and during a part of the war. Her home was on a large coconut plantation, where she lived long enough to acquire a sympathetic and understanding interest in the people. Readers will find the volume very interesting and quite different than the usual "horror type."

James S. Gregory and D. W. Shave. **The U.S.S.R.** 636 pp. Illustrated. Wiley & Sons, N.Y. \$4.25.

This geographical survey of the Soviet Union was first published in 1944 and has been reprinted recently. It is a mine of information on Soviet Russia and will be found highly valuable to all who teach either Europe or Asia.

Edwin J. Foscue. **Taxco: Mexico's Silver City.** 31 pp. Illustrated. University Press, Southern Methodist University, Dallas, Texas. 1947. \$1.00.

This is one of the volumes in the "American Resort Series" and is a fascinating description of the history, location, and geographical features of the city of Taxco, Mexico.

Ralph H. Brown. **Historical Geography of the United States.** 596 pp. Illustrated. Harcourt, Brace & Company, N.Y. 1948.

The late Professor Brown put an enormous amount of detailed study and years of careful and painstaking research into this volume. To undertake an historical geography of a country the size of the United States is a huge task. Professor Brown deals with the colonization period and then treats the country as a whole by means of regions. The volume will undoubtedly become a standard source of information in all courses dealing with the historical geography of our own country.

Dr. H. J. Keuning. **Het Nederlandsche Volk In Zijn Woongebied.** 536 pp. Illustrated. H. P. Leopolds Uitgevers-Maatschappij N.V., Noordeinde 23, 's-Gravenhage, Netherlands. 1946. \$12.50.

This extensive volume sets forth the problem confronting the Netherlands and deals extensively with the climate, water resources, the cultural landscape, the people, and the industrial development.

Guy Irving Burch and Elmer Pendell. **Human Breeding and Survival.** 138 pp. Penguin Books, Inc. New York. 1947.

Revised edition. Originally published with the title, *Population Roads to Peace or War*. Challenging statements relative to population limitations.

Morsk Geografisk Tidsskrift. Vol. 7, No. 5-8. **Det Norske Geografiske Selskab**, Oslo, Norway.

This volume commemorates the fiftieth anniversary of the founding of the Norwegian Geographical Society which followed Nansen's pioneer expedition across Greenland on skis. The articles, published in English, French, German, or Norwegian, deal principally with research in polar regions, Norway, Yunnan, and the Congo.

Alfred M. Leeston. **A World Tour in Oil.** Alfred M. Leeston, Department of Economics, Southern Methodist University, Dallas 5, Texas. 1948. 35 pp. 50¢.

Dr. Leeston prepared this interesting volume in connection with his work at Southern Methodist University. It is written in simple and interesting style and will be found to be highly useful to teachers at all levels. It discusses the problem of oil around the world.

Gasoline by Synthesis. Standard Oil Company, New Jersey. 1948. 22 pp. 30 Rockefeller Plaza, New York City 20. Free.

This little pamphlet is one of many highly useful publications gotten out by the Standard Oil Company. It describes the steps involved in providing gasoline from sources other than petroleum. Another very useful pamphlet published by the same company is entitled "Petroleum in the World."

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GEOGRAPHIC CONDITIONS IN BREATHITT COUNTY, KENTUCKY

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The Southern Appalachian hill lands have been, since the latter part of the Nineteenth Century, widely publicized as a region of relative poverty, economic backwardness, and social retardation. Since that day, the region generally has made noteworthy advances along social and economic lines. Indeed, some areas have witnessed amazing progress in human well being. Many areas, however, have remained practically at a standstill, while a few have actually retrogressed. In this last category, stand several portions of the hilly area of eastern Kentucky. Breathitt County affords a striking example of stationary, if not indeed actually retrograding conditions.¹

THE REGION

The County is situated in one of the more maturely eroded portions of the Cumberland Plateau. The streams have so thoroly dissected the area into a maze of ridges that none of the original upland remains. At the same time, little level lowland has been formed, save for narrow strips along the larger streams—notably the two forks of the Kentucky River. To make matters worse, the area is walled in from the Great Valley on the east by several hundred miles of barrier ridge. On the west, it is separated from the rolling limestone plains by a rugged escarpment.

During the latter half of the Eighteenth Century, English and Scotch-Irish colonials began to trickle into the area. They laid claim to extensive tracts of land, hacked down patches of tangled wilderness and built crude log cabins. These newcomers found a

¹ This paper is based upon residence in Breathitt County, during 1941-'42, and field work done there during 1946-'47.

variety of natural assets. A magnificent hardwood forest covered ridge and valley alike. Well-trod buffalo trails were in evidence, black bear and white-tailed deer were numerous, and gray and red squirrels, rabbits, turkeys, small game birds, and fish were amazingly abundant. Such fur bearing animals as fox, raccoon, skunk, mink, opossum, and muskrat were plentiful. Surface outcrops of coal were noted by Christopher Gist as early as 1750.²

EARLY ADJUSTMENTS

The early settlers eagerly took to tilling the soil in Breathitt County. It was in the quite limited and narrow bottom lands that they found fertile land with acreage enough for a patch agriculture. Generation after generation hacked at the forest, clearing a piece here and a piece there. They cut firewood, hunted the wild game, drank corn whisky and home-made brandy, sometimes fought savagely amongst themselves, and exhibited unusual proficiency at begetting a numerous progeny.

Indian corn was the principal crop of early days—a crop well suited to the narrow strips of bottom land, then adequate for the limited population. Only a little wheat was grown, most of the bread being made of corn meal. After corn, the important food crops were white potatoes, sweet potatoes, beans, peas, and turnips. As early as 1839, some 2,648 pounds of tobacco were produced. In that same year, cotton (a crop not produced at all today) was grown to the amount of 4,270 pounds. Most of this cotton went into the home industries of mattress and quilt making.

Thruout its early history the rugged terrain made it necessary for the people to depend solely on “natural highways”—paths along the streams or crude craft upon the rivers in time of high water.

The two forks of the Kentucky were navigable only during certain months of the year when the volume of water was sufficient to float the logs and flat-bottomed boats over the numerous obstructions. Most of the early exports were in the form of logs, and a “log-run” was usually the climax of the timber-cutting season. One high water each year ordinarily would bring down most of the previous season’s production. During these highwater periods,

² Workers of the Writers’ Program of the WPA in the State of Kentucky, *Breathitt: A Guide to the Feud Country*, Bacon, Percy and Daggett Publishers, Northport, N.Y., 1941.

merchants transported their products, usually staves, ties, and ginseng root, on the raftlike boats out to the Bluegrass for sale.

EXPLOITATION AND DEPLETION

This comparatively carefree, humdrum, and uncomplicated way of life remained practically unmolested for about a century. Moreover, the natural resources, which to the untutored hillsman seemed inexhaustible, were relatively untouched until the coming of the railways into eastern Kentucky. The early settlers regarded the forest as a barrier to agriculture, but they cleared merely the

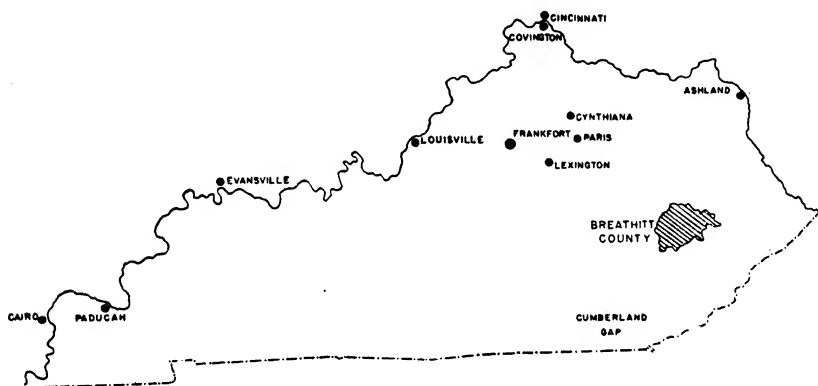


FIG. 1. Orientation map, showing Breathitt County in relation to Kentucky as a whole.

bottom lands. It was only as population increased and the supply of wild game decreased that land clearing was pushed up the hillsides. Most of the soils are light gray to yellowish sandy loams derived from sandstone, markedly deficient in lime and humus. Hill-side soils are thin and wash badly when cultivated, becoming valueless in a short time. Leaching and washing are year-round processes owing to the abundant and fairly evenly distributed precipitation. In less than a century these processes began to overtake and triumph over land clearing.

Since the first settlement, small amounts of coal have been "stripped" and used occasionally in the mountain home in place of wood. It has been marketed "down the river" since the thirties of last century. Three thousand tons valued at \$9,000 were sold in the year 1835. The census of 1860 credits the county with a pro-

duction valued at \$7,550. By 1854, the Kentucky Geological Survey had studied the coal seams, and noted that the extensive trade in the commodity was supplying the bulk of the ready cash circulating there. Farmers did most of the mining in the autumn and winter when they were not busy tilling the soil, and it was not until the entry of the railroad in 1891 that mining became something more than a sideline. With its coming, small companies were formed and rather extensive tracts of coal lands were leased or purchased. Shortly after, Breathitt became one of the leading Kentucky counties in coal production; but the position lasted only for a short period, as the thin seams soon proved uneconomical to work in competition with richer mines elsewhere.

The quickening tempo of the machine age not only disrupted many old habits and customs, but also the economic foundation of the agrarian economy, with resultant repercussions continuing even to the present day. Within a decade, more modernization took place than in the county's entire span of previous history. Coal mining and lumbering boomed in an extractive orgy. The extravagant use of these resources and depletion of the land was somewhat typical of frontier excesses everywhere. Much wealth was gotten out of the hills but only a little trickled into the pockets of the local people. The agents of the coal and timber interests who had penetrated the region before the coming of the railway had in many instances purchased land from the backwoodsman for as little as a dollar an acre. ". . . prodigal exploitation and naive optimism characterized the closing years of the nineteenth century . . . but the high expectations did not bear fruit—nor were the benefits of the new prosperity ever widespread. The twentieth century came in Breathitt while the ruthless hand of the nineteenth was still scouring its hillsides for marketable timber and gouging in its hillsides for coal."³

Then came the inevitable reckoning—the exploitive frontier had swept over the county and moved on southeastward. Behind it lay denuded and soon to be eroded hillsides and gaping mouths of mines unworked since the beginning of exploitation of the more profitable beds to the southeast. As the ephemeral prosperity passed, it left in its wake a poorer county with a more than doubled population.

³ *Ibid.*, p. 7.

PRESENT CONDITIONS

Yesterday's folly has not only left its impress on the natural landscape but also on the myriad aspects of the social environment. Today, one witnesses woeful maladjustment in all forms of economic production. Subsistence agriculture, unscientific timbering, vanishing wildlife, marginal mining, practically no manufacturing, and little trade characterize the county.

Agriculture. In 1940, 70 per cent of all employed residents of the county were employed in agriculture. The county has never been,

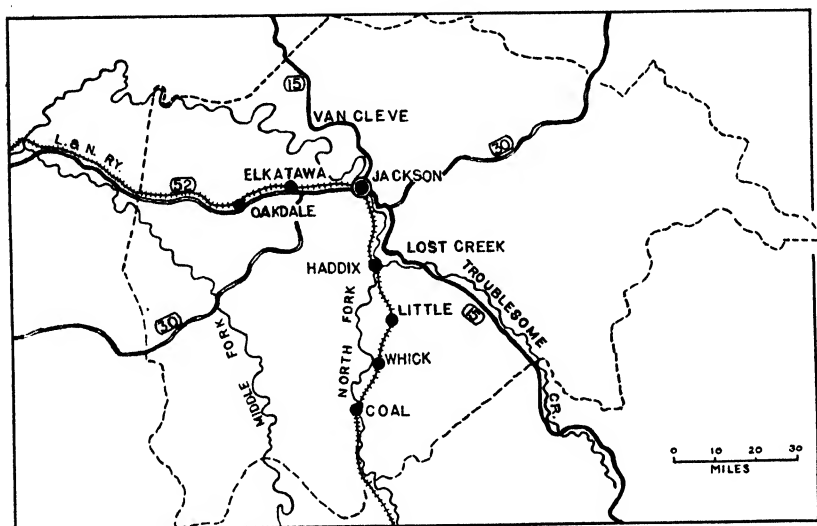


FIG. 2. Breathitt County, Kentucky.

and perhaps will never be, well adapted to this activity, and farming is largely of a subsistence or general type with production mainly for home consumption. The cultural traits of the people most certainly play a part in the agricultural pattern, but the dominant role is undoubtedly played by the physical setting, especially by soils and topography.

Improved methods of agriculture tend to develop gradually everywhere; in Breathitt County this process had been a little less than gradual until the 1930's, when some progress was made thru the combined efforts of the Federal Government and the State Agricultural Extension Service. Corn has always been the dominant crop—possibly no other easily grown crop today could sup-

port so many people, even at the subsistence level; but it is the nature of corn to take much and return little or nothing to the soil, and to invite erosion, especially where the land is steep. The unschooled farmer cares little for contour plowing; and with cultivation in the spring and summer and exposure to the relatively heavy showers, severe erosion is a natural consequence. After the harvest, the more or less bare ground is exposed to the winter rains, and to freezing and thawing which continues the erosion cycle, retarded only by the dead roots and weeds. And, so long as corn remains the dominant crop, irreparable damage from erosion is inevitable.

Even tho these conservative farmers tenaciously hold to their favorite crop, recent years have witnessed an increasing number of them reporting soil conserving ones. Only 15 reported planting clover or lespedeza in 1934, while 104 reported such planting in 1939. The corn acreage has remained relatively stable for the past several decades, fluctuating between 25 and 30 thousand acres a year, and seldom covers under three-fourths of the cultivated land. In 1939, Breathitt averaged less than 17 bushels per acre—the nation a little less than 30, Iowa nearly 55—a reflection of the poor soils and general agricultural backwardness.

Farm Size, Tenure and Income. There has been a gradual increase in the number of farms since the early days, the average farm decreasing in size from 75.6 acres in 1930 to 67.8 in 1940. The average value of farm land and buildings in 1940 was \$13.25 per acre, and only \$78,000 worth of farm implements and machinery was reported in the entire county. There were approximately 27 persons to each horse, 13 to each mule, nearly four to each cow, and three to each hog—a rather limited livestock holding for a rural county of some 24,000 persons.

In 1939, white tenants worked nearly one-half of the cultivated land (only three farms, totaling 67 acres, being operated by non-whites). In 1930, 39 farmers had automobiles, eight had motor trucks, but not one had a tractor; in 1940 the number of automobiles had risen to 114, trucks to 87, but still no tractor was reported. It is significant to the agricultural picture that in 1939 there was purchased only 69 tons of commercial fertilizer in the entire county. "In the county in 1939, the average value per farm of all agricultural products sold, traded, or used by the operator's family was \$284.00, of which 80 per cent was accounted for by the value of

products used."⁴ In other words, in 1939, the average farm produced for the operator \$227.00 worth of consumable agricultural produce, and \$56.80 in cash. In 1941, the net cash farm income of an average group of farm families averaged \$41.00.

Agriculture here cannot possibly support the farm population adequately, even with supplementary income from employment on public works, and in the meager industrial and commercial activities of the county. Limited arable land, soil depletion, erosion, and inefficient farming methods have combined in the past to produce only a subsistence level of living, and efforts to increase the arable land has only led to a greater number of eroded hillsides. A marked increase in the productivity of the small amount of fairly good land is unlikely.

Wildlife Exploitation. The poverty of the people has been instrumental in almost exterminating all forms of wildlife. The ranks of the fur bearing animals have been severely decimated, and only occasionally can a deer be seen; rabbits and squirrels have fared only a little better, while all forms of aquatic life have practically disappeared. Any idea of the conservation of wild animal life, and indeed conservation in general, is totally foreign to these hill-folk.

Forestry. The reckless exploitation of the forest, which began with the coming of the railway, continued unabated until the early twenties when the supply of marketable timber became exhausted. The tree cover is slowly becoming reestablished, but owing to the extravagant cutting practices thruout the county's logging history, the present low-grade forests are of relatively little value. Fires have regularly played havoc with this resource, and even today the scorched and smouldering hillside is a common sight. These low-grade cut-over forests still occupy seven-tenths of the land, and provide at least one avenue toward a reorganization of the marginal economy.

The forests provide employment for only one per cent of the population, and support only a few small, scattered and inefficient processing plants which have little contact with the outside market. The timber is of such inferior quality that much of it is unable to bear the cost of expensive transportation, and hence the distance it can travel to market is severely limited. The species most in demand occupy only a minor place in the stand, whereas the ma-

⁴Kentucky Agricultural Experiment Station, University of Kentucky, *Timber-Products Marketing in Eastern Kentucky*, Bul. 488, June, 1946, p. 13.

jority of the trees are of less desirable kinds. In 1944, the net sawlog volume was: beech 27 per cent of the total, black oak 12, hickory 11, scarlet oak ten, northern red oak seven, with most of the remainder consisting of white oak, chestnut oak, yellow poplar, black gum, and short leaf pines.

In recent years, well over 90 per cent of the timber cut was shipped out of the area. Louisville today receives the bulk of veneer logs, most of the staves, and a large portion of the ties. A considerable part of the production moves thru Cincinnati, Ashland, and Huntington. World War II brought a tremendous increase in timbering in the County, in striking contrast to timber production in other areas of the nation. This shows clearly that Breathitt's is a marginal position in the market. The products were mostly rough or unfinished and entered the market mainly as a raw material destined to be further processed.

The exhaustion of the county's forest resources is a striking example of near-sighted profit seeking in the present national economy. It is said to require some two hundred years for the maturity of most of Kentucky's hardwood species, but that the forests may be cut over every sixty years without harm provided it is done scientifically. Altho the Breathitt County section of the region stands near the lower end of the scale with respect to economic conditions which encourage timber processing and marketing, and altho it has been one of the most ruthlessly exploited areas, nevertheless these practically destroyed forests hold some hope for the future. In fact, it offers potentially one of the few hopes for such a thoroly ransacked area. The ragged character of the residual timber attests to the shortsightedness of those who sold this natural resource for a pittance to the lumber companies, which moved in, denuded the hills and hollows, and then moved on to richer and more productive areas.

Mining. In mining, as in timbering, the county has seen its best days. By 1934, it had dropped to nineteenth place among twenty-two coal producing counties in the state. There was an upward surge of production during the First World War, and the subsequent "boom" days of the twenties, with the annual production reaching 208,000 tons in 1929—another evidence of the county's marginal productivity. In 1944, the total production had fallen, despite demands of the Second World War, to 51,000 tons, 48,000 tons being produced by the two "railway" mines, and 3,000 by

four small "truck" mines. Today, as in the past, individual farmers "dig" a little for the local market and for home use. The discovery and mining of the more profitable coal measures in the state, and thruout the nation, has almost nullified the commercial importance of Breathitt County's thin seams.

There has been in the past a small production of petroleum, but there is none today. There is a little natural gas, some having been



FIG 3. Small sawmill in foreground, farm in background, corn on lower right hand slope. Note young trees invading former field on the steep left hand slope. (Courtesy University of Kentucky.)

recently piped to Jackson, the county seat. In the early days, salt was produced, and one of the most important works in eastern Kentucky was located on Troublesome Creek. This industry did not die out completely until the coming of the railroad. Local sandstone of inferior quality is used today to a limited extent for bridge abutments and for rough construction. A new and much used county jail was constructed several years ago of this material. In both the Middle and North Forks of the Kentucky River there are small quantities of loose sands suitable for concrete construction. In mining extraction, however, as in most other fields of endeavor, there is little promise of more profitable days.

Manufactural and Commercial Enterprise. In 1940, the only manufacturing concern in the county was a small stave company located on Quicksand Creek about three miles from the county seat, and this was engaged in the production of tobacco poles and white oak staves for whisky barrels. The first sawmill was reported in 1840, but since then the number has fluctuated greatly, reaching a peak in the first decade of this century—rising with each “boom” and war, and falling when the demand for marginal timber subsided. World War II was instrumental in reviving this industry, so that by the end of 1942 there were some 50 circular sawmills, a stave mill, five planing mills, and three woodworking shops in operation. All the sawmills were owned and operated by individuals, with the exception of the three larger and more efficient ones which were corporation owned. Sawing costs were low because the wages paid were the minimum possible under the Wage and Hour Law, and because the crews, consisting of from eight to 14 men, were for the most part semi-skilled. The three woodworking shops produced chairs, tables, cabinets, bedsteads, and other simple furniture, primarily for local use.

The 1940 census lists but one drug store in the county, two hardware stores, eight gasoline filling stations, and 107 general stores, with these latter doing the bulk of the county's business. Here the checker-playing, tobacco-spitting contests of the past are still holding their own against all innovations of today. There is no hurry and bustle in Breathitt's business establishments, as the casual customer probably comes as much for the visit as for the purchase.

Living Conditions. The homes in the county today are not only substandard but bear a marked resemblance to the dwelling of the pioneer. There are still a few log cabins, some even with chinked wooden chimneys; but most of the houses are constructed of rough, knotty, and unfinished slabs—the unmarketable refuse of the timber-cutting era. The usual foundation is of upright logs inserted into the ground with braces criss-crossing between them; tin or roll composition roofing is the usual covering. Even today, a few of the cabins do not have glass windows, and it is not unusual to see the boarded inside walls papered with the leaves of mail-order-house catalogs. Until relatively recent years, there was no modern convenience in the way of light, heat, or sanitary plumbing in any farm house in the county. According to the housing census of 1940 approximately half of the owner-occupied dwellings, and two-thirds

of the tenant-occupied ones, were in need of major repairs. Only 16 per cent of the rural farm homes had a radio; of the 4,038 houses in the county only 47 were electrically lighted, 28 had mechanical refrigeration, and 25 had ice refrigeration, 20 had running water, while only 13 had a bath with flush toilet. Of the 832 rural non-farm dwellings in the county, only 170 were equipped with bath. Stoves had in large measure replaced the fireplace, altho three-fourths of the rural farm units still cooked with wood. The average value of the rural farm homes (over 80 per cent of all the dwellings in the county) was only \$359.00 in 1940, with an average estimated monthly rental, where tenant-occupied, of \$2.45.

Most of the people of the nation have not had the pleasure of visiting in one of these rustic homes, nor the experience of sleeping on a pioneer type of bed, often with a mattress made of corn shucks. In this northward jutting extension of the area of hominy, salt pork, and cornbread diet, however, they can readily experience it. A few chickens, a pig or two, and a scrawny cow usually adds a little life and movement to the somber scene. Birth and death in the remote hollows is still strictly a family affair in which certificates have no part. On the sides of the hills, a little above high water mark, these people live their lonely lives, uneducated, uninterested, unaware in large measure of the dangerous and clashing interests, national and international, which are rampant in the world today.

Education. Of all the mal-adjustments of men to this niggardly environment none is more appalling than the educational. When the magazine *Occupations* made a survey in 1936, only 25 of the 105 schools in the county could be reached by automobile. Of the 2,443 children who either finished or left the elementary schools between the school years 1931 and 1936, only 362 enrolled in the one high school, or roughly one out of seven. According to a survey made in 1945 by the College of Education at the University of Kentucky, 38 per cent of the population 25 years old or older have had four years or less of schooling. In 1945, the median educational level of the 20 to 24 year old group in Massachusetts was 12.1 years, Kentucky 8.8 years, Breathitt County 6.2 years. And inter-county comparison within Kentucky will perhaps throw a little light on the situation: Fayette County, less than one hundred miles away, had a general levy of \$.70 per \$100.00 of property subject to school tax. Breathitt at this time had a general levy of \$.75. The resulting tax return, however, amounted to \$44.79 per census pupil in Fayette, but to only \$3.56 per census pupil in Breathitt. One

county is uniquely fertile, well located and has an efficient transportation system—the other is markedly infertile, rugged, isolated and has an extremely poor transportation system.

Roads and Transport. School absenteeism, thru no fault of pupil or parent is one of the most perplexing school problems facing the county. The rough topography and consequent rapid run-off of the

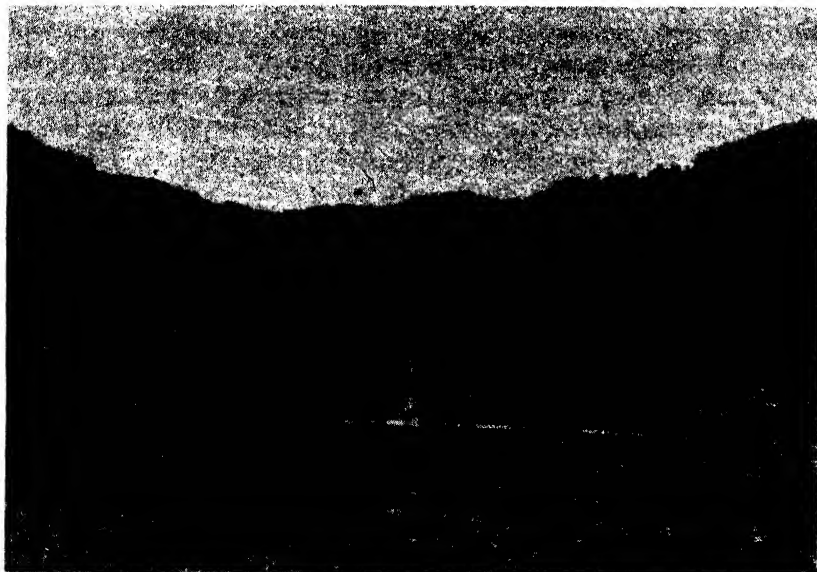


FIG. 4. Typical view of maturely dissected Cumberland hill county, showing Breathitt County's only paved road in the foreground. Note long shoestring farm in the valley bottom. (Courtesy University of Kentucky.)

rains, with resultant overflowing streams is the major factor in this problem. "During a large part of the year creek-bound communities still are marooned by the mud and by the unbridged, swollen streams that vein the countryside."⁵

It is only in more recent years that Breathitt's roads have become something more than trails. Even today, only one poorly paved bituminous highway crosses the county. There is a stretch of some 40 miles of gravel, while most of the remainder consists

⁵ Workers of the Writers' Program of the WPA in the State of Kentucky, *Breathitt: A Guide to the Feud Country*, Bacon, Percy and Daggett Publishers, Northport, N.Y., 1941, p. 4.

of unimproved dirt roads, on which are located over 80 per cent of the county's farms. Of the 3,462 farms in 1940, 2,678 were on such roads, while in Fayette County only eight out of a total of 1,063 farms were so situated. Certainly one of the reasons for backwardness is the slow and hazardous means of travel. The first roads were sponsored and managed by the county court which allowed able-bodied men to do a certain number of days of road work each year to defray their taxes. Even today, this ancient system is still in operation in some sections, a circumstance which at least partly explains the transportation problem. There are still communities where wagons and automobiles have to be abandoned for the greater part of the year in favor of sleds and horses or mules. A few of the more isolated communities cannot be reached by roads, but instead are served by bridle paths and sled trails. The Kentucky State Highway Department reported in October, 1946, that 80 per cent of the county's roads are considered impassable during the winter months.

The arrival of the railroad in 1891 more effectively penetrated the isolation than all of the previous river improvements and summer roads, and it ushered in the unrestrained exploitive era which was to last some three decades. The railway, now a part of the Louisville and Nashville system, operates 36 miles of roadbed in the county and is the source of a large portion of the county's cash income. The principal commodity hauled over the line today is coal, not from Breathitt, but from the counties farther to the east.

Lack of good transportation and lack of economic opportunity are twin evils, each fostering the other. Lack of transportation fosters the cultural and economic isolation of not only families but of whole communities. This condition has left its mark on the physical, mental, and moral development of the people, with a concomitant lowering of economic efficiency. Here isolation has fallen most heavily on the preponderant farmer class, and has gone far in determining farm economy. Until a better transportation system is provided, there is little likelihood of a marked change in agricultural practices or of a rise in standard of living.

Overpopulation. Overpopulation is today one of the county's more acute problems, and this, when coupled with the so-called "rugged individualism" which is characteristic of most of these descendants of English and Scotch-Irish ancestry, becomes almost

sinister. Altho 49 persons per square mile is rather sparse when considered as a statistical expression of density, it is obviously excessive population density when considered in relation to Breathitt's economic opportunities under prevailing conditions. The population net increase had followed a steady upward curve until the advent of the period of exploitation induced by the advent of the railroad, whereupon it exhibited an abnormal rise. During the 1920's, this unward trend was sharply interrupted by a lessening of employment in the county, and second, a tremendous expansion of industrial employment in states to the north of Kentucky. The "depression" of the 1930's, however, reversed the trend. Industrial "layoffs" in Ohio, Indiana, and Michigan drove the emigrants back to Breathitt, and whereas the county's net population had increased less than three per cent during the 1920's, it jumped some 13 per cent during the 1930's.

The county, of course, offered these returnees no escape from poverty. It merely offered them a kind of poverty with which they were familiar—a type quite unlike that which they had seen in the slums of the industrial city. There was the garden patch with vegetables in season, the antiquated grist mill to grind the stunted corn of the hillsides, and kinsfolk to visit when the larder was bare. There was the old accustomed way of life, a sub-marginal existence in an unyielding environment from which they had tried to escape.

In 1940, some 70 per cent of all those who were gainfully employed were at work in agricultural pursuits. This amounted to nearly four times the national average. Only two per cent was engaged in manufacturing—about one-twelfth the national average. Seven per cent was engaged in mining, and one per cent in forest work.

It is obvious that the economy of this hill country is largely a closed one, for a large proportion of its production is used within the county, and relatively few things are brought in from without. In normal years of late, practically nothing has been processed for sale outside the county. On the whole, the people live mostly from the soil, consuming its production. Development of local industry has potentialities, but must be regarded as merely one of the several possible solutions, rather than as the single answer to the many economic ills. It is unlikely that industry will be able to absorb any appreciable portion of the growing population, or to

raise the per-capita income noticeably. Coupled with an extreme shortage of both capital and efficient management, is the lethargy of the people—people who are ignorant, malnourished, almost destitute, but apparently still satisfied, in the main, with the ways of living developed by their forebears.

PROSPECT

One might conclude from the foregoing discussion that there is little prospect of a more abundant life for these hillfolk so long as they remain in this poor environment, and so long as isolation and poverty continue to be barriers to any extensive emigration. Such a conclusion, however, would overlook several essential geographic realities.

There is still much wealth in Breathitt. A reasonable and modest scientific program of conservation and utilization of natural resources, of education and agricultural retraining, might provide fairly adequately for the present population. It is a fact, however, any such modest program is beyond the means of the county's few well informed citizens who would like to see something done about the deplorable state of affairs. Those who have witnessed the transformation in many parts of the Tennessee Valley know that vast improvement is possible, and they hope that some similar miracle may come to eastern Kentucky. The rehabilitation of Breathitt County and other similar parts of the Kentucky hill country is a job too big for the counties or the state alone to tackle; it will require the planned cooperation of the nation.

There are many aspects of the total problem, and hence many partial answers may be given. Readjustments in land use, better farming methods, abandonment of the poorer farmland, acquisition of much of the area by the Federal Government with subsequent reforestation, scientific operation and management of the mines, greater State and Federal aid to the schools, emigration to other areas, and a host of others might be suggested. Possibly a combination of all these approaches might prove profitable.

One of the most noticeable traits of Nature is the partiality with which she bestows her gifts—gifts which in the case of Breathitt are unlikely to produce, under the existing economy and present state of the arts, anything in the near future other than marginal existence for a thwarted people.

THREE MAPS OF PALESTINE

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Few small areas have played as noteworthy a role in world history as has Palestine. No comparable area within recent years has caused as much and as prolonged disturbance in world relations. The importance of this country becomes rather impressive when viewed in the light of its relatively small size. A Biblical journey "from Dan to Beersheba" was a mere one hundred and forty miles; from Joppa to Jericho less than fifty miles. Despite its small size, many sober students of international affairs believe that Palestine may, sooner or later, provide a crucial test of the workability of the United Nations organization. There are herewith offered, therefore, three maps of Palestine which are essential to any understanding of the drama being currently played in that area.

PHYSIOGRAPHIC PALESTINE

Palestine is a fairly well defined physiographic unit lying between Egypt and Syria. It includes four main divisions: the Coastal Plain, the Central Highlands, the Rift Valley, and the Trans-Jordan Highlands (see Fig. 1).

The Coastal Plain. The Mediterranean margin of Palestine is a low coastal plain varying from three to thirty miles in width. The bold ridge of Mt. Carmel divides the plain into two parts. The northern section is narrow and indented by the Bay of Acre. Behind this, however, is an extensive riverine lowland, the Plain of Esdraelon. Numerous springs rendered this latter highly malarial until it was drained by Jewish colonists after the First World War. There is now a flourishing agriculture on the rich alluvial soils.

Immediately south of Mt. Carmel the coastal lowland is known as the Plain of Sharon. Farther south it is called the Philistine Plain. The former is heavily populated by Jews, the latter chiefly inhabited by Arabs. The entire coastal plain above Gaza is predominantly agricultural. It is here that most of the citrus crop, Palestine's principal export, is grown. South of Gaza, nomadic grazing holds sway.

The Central Highlands. The Central Highlands are a fairly continuous line of uplands extending southward from the Lebanon Mountains. South of Tyre, the Lebanons decline to hill-country proportions and are known as the Hills of Galilee. The inhabitants

are poor and backward, and this area is the only portion of the country which has lost population within recent times.

South of the Galilean uplands and separated from them by the Plain of Esdraelon are the Hills of Samaria. These latter consist of a jumble of hilly knolls and ridges interspersed with small basins. Settlements are confined to the basins and lower slopes. Olives are the most characteristic crop in this district. Mount Carmel, a northwestward extension of the Samaritan uplands, reaches the Mediterranean Sea south of the Bay of Acre.

The so-called Plateau of Judea, south of Samaria, is a large peneplaned fault block tilted toward the west. Altho dissected by deep valleys, its upland character is well preserved. The population, here, is fairly dense, and the section is an important olive and grape producer. Several important settlements, such as Jerusalem, Hebron, Bethlehem, and Beersheba mark the Judean Plateau.

To the south of the Plateau stands the desolate looking Negeb. Its lack of regular precipitation makes it habitable only by semi-nomadic Arabs. Southward the Negeb widens into the Uplands of

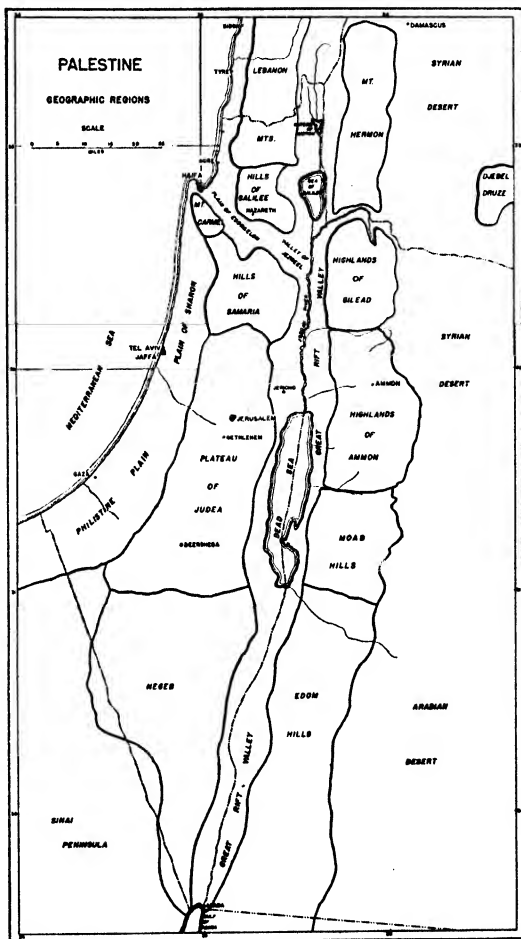


FIG. 1

the Sinai Peninsula. The mineral resources of this district are considerable, but the Arab population is very sparse and chiefly engaged in nomadic grazing.

The Rift Valley. The great Rift Valley is a deep fault furrow or graben extending from Syria to the Red Sea. The southern end of the Valley is occupied by the Gulf of Aqaba, but from there north to Syria it is occupied by the Jordan River and its three lakes. These are Lake Hule (Waters of Merom), Lake Tiberias (Sea of Galilee), and the Dead Sea. From Lake Tiberias southward, much of the Rift Valley lies below sea level. The Dead Sea is bitterly salt. The upper Jordan Valley is irrigated, the Jordan district being famous for its date gardens and, more recently, for its banana plantations.

The Trans-Jordan Highlands. East of the Rift Valley with its lakes, stand the Trans-Jordan Highlands. These form a transition between Cis-Jordanic Palestine and the Syrian Desert. At the north, stands the Mount Hermon fault block—sometimes known as Djebel Hauran. Rich soil and an abundant winter rainfall produce good grain crops and pastures.

South of Mount Hermon are the Highlands of Gilead. On the west these terminate in a ragged fault scarp, but on the east they extend to Djebel Druse and the desert plains. The higher elevations carry evergreen groves; the slopes are grass covered; while the valleys support orchards and vineyards.

Farther southward, the Highlands of Ammon and the Hills of Moab form the southeastern limit of agriculture. Nomadic grazing predominates, with agriculture found only in a few small oases. The Edom Hills at the extreme south are a parched desert wasteland.

HISTORICAL PALESTINE

The Hebrews first appeared in Palestine (Land of Canaan) 4,000 to 3,800 years ago. It was not, however, until the time of Joshua (circa 1200 B.C.) that conquest and large scale settlement was undertaken. Jehovah reportedly had earlier said to Moses, "This is the land which I swore unto Abraham, unto Isaac, and unto Jacob, saying, 'I will give it unto thy seed.'" Whereupon Moses issued a command that the land be divided among the twelve tribes of Israel (the Hebraic people). These twelve tribes are legendarily explained as the descendants of the twelve sons of the early Semitic patriarch Jacob. In the actual division of the

land, however, the tribe of Levi, which constituted the priesthood, received only a designated list of towns scattered over the countryside. To offset this, the descendants of two of Jacob's grandsons (Ephraim and Manasseh, the sons of Joseph) were each given a son's share in the territorial division (see Fig. 2).

At Moses' command, Asher, Zebulun, Naphtali, Issachar, and half of the tribe of Manasseh were settled in the north; Ephraim, Dan, Simeon, Benjamin, and Judah were settled in the south; Reuben, Gad, and the other half of the tribe of Manasseh were allocated lands east of the Jordan.

"And Moses swore on that day, saying, 'Surely the land whereon thy foot hath trodden shall be an inheritance to thee and to thy children forever, because thou hast wholly followed the Lord my God.'"¹

This division of territory and the subsequent settlement of the land marked the

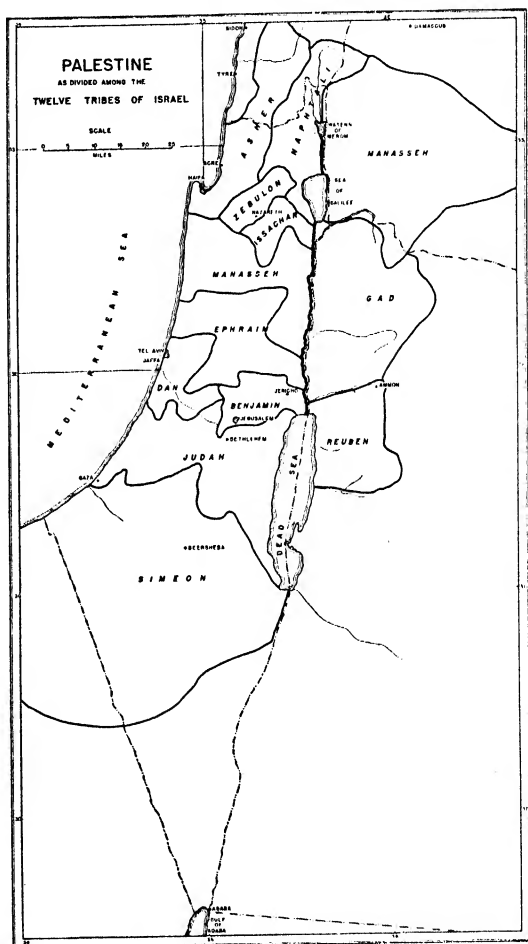


FIG. 2

beginning of Hebrew nationality. Palestine, however, was an open corridor between Mesopotamia and Egypt, and it would have required immense military strength to have held it permanently and

¹ Joshua 14:9.

in its entirety. For the most part, invading armies kept to the coastal lowlands and from these latter the Israelites or Hebrews were repeatedly repulsed and driven back to the highlands. After many centuries only the tribes of Judah and Benjamin, in the comparative inaccessibility of the Judean Plateau, survived.² Eventually, these were crushed by the might of Rome and dispersed over the Roman Empire.

From then on, Palestine was variously held by Romans, Byzantines, Mamelukes, Crusaders, and Turks. Thruout much of this time there were at least a few small colonies of Jews in the Holy Land. Thus, the Jews have had a much longer continuity in Palestine than any other people.

POLITICAL PALESTINE

In modern times, Jewish colonies began to be established in Palestine as early as the fifteenth or sixteenth century. Most colonization has, because of the pogroms and other persecutions, first in Russia and then in Western Europe, taken place within the last eighty years. After the First World War, one of the world's most pressing problems was that of finding a haven for the Jews of Europe. Indeed, the problem went beyond that, namely to find a homeland where the Jews would have the chance to establish a national state wherein they could become a majority and thereby eventually make persecution an impossibility. Since Palestine had just been wrested from Turkey, one of Germany's war partners, the opportunity to make Palestine the Jewish homeland presented itself.

The question of the political control of Palestine has been, from the outset, the most serious problem. The League of Nations realized that to turn the government over to either the Jews or the Arabs would bring immediate discord. The Arabs were uneducated and had had no experience in self-government. Moreover, the Arabs, as such, had never governed Palestine. The Jews, on the other hand, were distinctly in the minority.

In view of this situation, there was but one course for the League to take: to put some strong Western Power in charge of the mandate. Britain was selected because of its interest in the Suez Canal and because it was strong enough to maintain order during the era of immigration and education of the natives in self-

² And hence the name Jews for their descendants.

government. Great Britain, as administrator of the mandate, was ordered to carry out the terms of the Balfour Declaration of 1917 which guaranteed the establishment of a Jewish National Home.

In setting up the mandate, however, large sections of physiographic Palestine were lopped off. Sinai was given to Egypt; Northern Galilee and Mt. Hermon (Djebel Hauran) were given to Syria; later, all of Palestine east of the Jordan was set up as a separate Arab state, known as Trans-Jordania.

The Arab-Jew relations deteriorated steadily from 1922 to 1937, whereupon the British Government declared that there existed an "irreconcilable conflict between the aspirations of the Arabs and those of the Jews in Palestine," and that this could not be settled under the terms of the mandate.

By 1937, the Jewish population of Palestine had increased 700 per cent, whereas the Arab population had increased perhaps 300 per cent. Despite this, the Jews were still in the minority. The British White Paper of 1939 practically put an end to Jewish immigration at the very moment when a Zionist haven for European Jewry was most needed. Had the "Holy Land" been open to Jewish immigration from 1939 on, there can be little doubt that the area would now contain a Jewish population numbering between two and five million. The 1939 White Paper, therefore, was tantamount to subjecting the "Jewish National Homeland" to permanent Arab rule.

In addition to religious fanaticism on both sides, there were numerous economic grievances on the part of the Arabs as well as the Jews. Palestine's business structure involves two distinct but closely intertwined economies—one Jewish and the other Arab. The Arabs are primarily engaged in grazing and small-scale subsistence farming. The Jews are engaged in intensive and scientific cash-crop agriculture and small industries. The latter's modern Western manner and standard of living have upset the Arabs with their strong desire to maintain their traditional patterns of life.

These stresses produced an increasing chain of violent acts by both Arabs and Jews. British deportations of recent Jewish immigrants led to open revolt by some elements of the Jewish population. Eventually Britain referred the whole Palestine problem to the United Nations on February 7, 1947.

Anticipating increasing disorder in the future owing to the widening Arab-Jewish breach, the United Nations voted to partition already-parceled Palestine into Arab and Jewish states on

November 29, 1947 (see Fig. 3). This proposed partition is based as closely as possible upon the present regional distribution of Arabs and Jews in the area, but it will create a difficult situation economically.

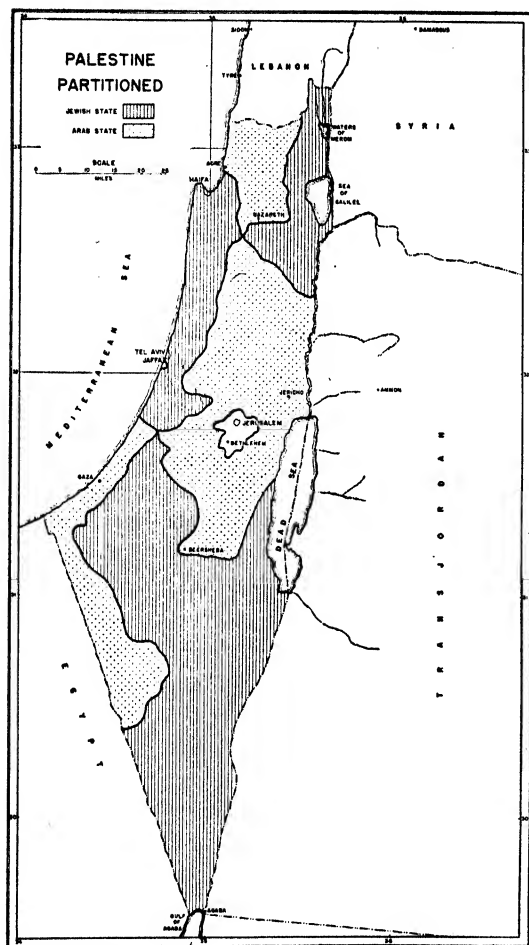


Fig. 3

did this latter become that on March 19, 1948, the United States delegate to the United Nations proposed that the official plan to partition the little country be postponed and hinted that it might even be abandoned.

No one at this time can foresee what will transpire in Palestine.

The new Jewish State will contain most of Palestine's industry, whereas the Arab State will include the richest agricultural lands, the best grazing lands, and so much of the Jordan River as to make impossible any development of a "Jordan Valley Authority." Jerusalem and environs is to be set up as a third state under international control.

The Jews accepted this plan without approbation and have gone ahead at the task of setting up a government for their state. The Arabs neither accepted nor approved the plan. Instead, an Arab army began massing just outside the borders of Palestine. So threatening

The original League of Nations plan may be carried out, or the United Nations' proposal may eventually be effectuated. Or, again, the area may continue to be a football in the game of power politics.

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IS THE FUEL SHORTAGE PERMANENT?

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The press of the nation frequently carried headlines last winter (1947-48) relative to fuel shortages, and as prices have risen for fuels, along with those of other commodities, all of us have been affected either directly or indirectly. This is a timely topic in which all people are interested. The press also headlined severe temperatures for various parts of the country, and has emphasized the sufferings in those areas, as well as the disruptions in industry, that have resulted from fuel shortages.

WEATHER CONDITIONS HELP TO ACCOUNT FOR FUEL SHORTAGE

The severe weather of the winter was a big factor in the fuel shortage—even to the closing of industrial plants—but it was not the sole cause. According to the February 7, 1948 issue of *Business Week*, 250,000 people were temporarily jobless as the result of the diversion of gas from industrial plants to homes for heating purposes. Temperatures of 50° F. below zero—readings that approximated the lowest ever recorded for this country—were reported

for the northern part of the United States. The prevalence of low temperatures may be verified from reports of the United States Weather Bureau, which stated, for example, that during the month of January Pittsburgh had a deficiency of 7° F. per day, New York City had a deficiency of 12° F. per day during this same month, and Cleveland experienced a temperature average of 12° F. below normal for the same period of time. Such temperatures obviously required additional amounts of fuel for heating purposes even the shortages already existed. Those low winter temperatures resulted from the invasion of great masses of polar air that originated in regions where winter temperatures are extremely low. As the air masses moved into the United States, they came over areas already covered with snow, and as a result, their temperatures were not modified to any great extent until they had moved into the southern borders of the country.

Climatic records do not show any marked or regular climatic changes. Some climatologists claim that our climate runs in cycles, others would have us believe that we are entering a period of general change, but the fact remains that the records do not bear out any definite cycle of recent climatic trends. The records are too short and too many variations are present to prove that climatic changes occur in a lifetime.

Our knowledge of air mass movements is too limited, at present, to make long range forecasts accurately. If, and when, such can be made they certainly will be an aid in planning for the production and distribution of fuels. The methods for making such forecasts accurately are yet to be perfected.

The climate of any area as we now use the term—the average or composite weather over a period of 35 or more years—gives at best only a general picture of weather conditions. Details are wholly lacking, and it is these details that give the actual conditions that one would experience in a given area. For example, the average January temperature in Miami is 66° F.; for Pittsburgh, the January average is 31° F. These figures do show that average temperatures for January in Miami differ from those in Pittsburgh for the same period, but they do not, in themselves, reveal that Miami has experienced frost, nor that the temperatures in Pittsburgh may drop, as they sometimes do, to 15° and 20° below zero.

Valuable data pertaining to the variability of weather can be obtained from weather records, such as: absolute maximum and

minimum temperatures, conditions of humidity, wind velocities, number of days below freezing, and similar data. There is a direct relationship between these factors and the supplementary fuels that would be needed in any locality for comfort.

EXPORTS OF FUEL HAD LITTLE EFFECT ON FUEL SHORTAGE

We have been prone to place the blame for our shortages in fuels on our export trade, especially shipments to Europe. A close examination of our export quotas of coal and petroleum products released by the United States Department of Commerce, the Office of International Trade is quite revealing. For the last three months of 1947, our total shipments of petroleum products outside of the United States was equal to less than one per cent of our domestic production. During that same period, we imported over twice the amount of petroleum that we exported.

Our exports of coal have been more significant for the same interval. Prior to the war we exported about three per cent of our coal production, but during the war that figure jumped to five per cent. Our total export tonnage of coal had risen, but because larger quantities of coal were being mined, the percentage of the total production that was exported remained the same. While our export trade in fuels was important, it had not increased in proportion to our increases in production. It is true that if we had kept the coal and petroleum at home it would have eased our fuel shortage, but it should be remembered that dynamic forces caused the shortages and export trade should not be considered a new causative factor.

INCREASED CONSUMPTION OF PETROLEUM AND PETROLEUM PRODUCTS

Severe winter temperatures greatly increase the demand for fuels. Moreover, our consumption of oil has risen from 367 gallons per capita in 1938 to 608 gallons in 1947. So the picture is more involved than it would appear to be at first. The increased use of hydrocarbons was definitely one of the contributing factors to our fuel shortage. Of the total energy derived from major sources in the United States at the present time, one-half is from coal, more than one-fourth from oil, and over one-tenth each from natural gas and water power. While coal is still our chief source of energy, the rise in the consumption of oil has been phenomenal.

According to the National Petroleum Council, there was a notable augmentation from 1941 to 1947, not only in the number of consumption units in use, such as cars, trucks, oil burners, tractors, space heaters and diesel locomotives; but also, in the percentage of petroleum products consumed, such as gasoline, kerosene and heating oil.

Demand in relation to supply was highest in light fuel oil. Consumption of heating oils increased almost 69 per cent between 1941 and 1947. Home owners have been installing heating units at the rate of a half million a year, each of which burns about 1500 gallons per year. Diesel locomotives constituted a still larger category of units using heating oil. The number of diesels in use increased over 411 per cent between those same years. Everyone knows what was back of the 20 per cent increase in the consumption of gasoline. It is a simple matter for one to recall the trend toward additional mechanization of agricultural operations, and the acceleration of peace time travel via plane and auto. Additional quantities of petroleum and petroleum products have been used in the manufacture of insecticides, fungicides, synthetic rubber and thermoelectric power.

SEVERE WINTER WEATHER HANDICAPPED DISTRIBUTION

The severe weather of our past winter not only increased the demands for fuel at a time when consumption exceeded production, but it also hampered distribution. Heavy snows interrupted highway and rail transportation, and low temperatures closed important inland waterways which are normally used to transport great quantities of coke, coal and oil. Industrial and urban centers, depending upon such means of transportation, were faced with short fuel supplies, even to the extent of closing some plants. This occurred at a time when steel was badly needed for the construction of additional facilities to produce and transport fuels.

The waterways that are especially important for the movement of fuels are the Hudson, the Mississippi, the Ohio, the Monongahela and the Great Lakes. The Monongahela, for instance, was closed more than twice as long as its normal period of approximately two weeks. This river, connecting the coal producing areas of West Virginia and western Pennsylvania with the Pittsburgh iron and steel district, carries a greater cargo tonnage than any other inland waterway excepting the Great Lakes. In 1941 it was used to trans-

port over 40,000,000 cargo tons of which coal, coke and oil made up over 95 per cent of the total.

SHORTAGE OF PRODUCTION AND TRANSPORTATION FACILITIES

It was the shortage of pipe lines, tankers, and refining equipment, not a diminution of the supplies of oil or natural gas that was largely responsible for the fuel crisis. For example, a scarcity of pipe was limiting not only the amount of fuel that could be moved from West Texas wells to refineries in the Mid-West, but also was one of the factors delaying work on the pipe lines in the Middle East. A shortage of tankers and tank cars limited the movement of fuel from surplus to deficit areas.

About 10 per cent of the total steel produced over the past decade has been used for pipe and tubes. We picked up our newspapers February 19, 1948 and learned that the Nation's steel producers simultaneously announced an increase of \$5.00 a ton (which amounted to about a 10 per cent increase) in prices for structural and semifinished steel (girders, slabs and bars). Steel men attributed this increase in price to the higher costs for such raw materials as coal, fuel oil, zinc, tin, refractory clay and steel scrap. Steel consumers from coast to coast greeted the rise in steel prices with the observation that there was no question that the costs of a broad line of industrial products would have to be reexamined for probable price revisions. The rise in steel prices retarded production of additional refining and transportation facilities at a time when they were badly needed for alleviating the fuel shortage.

ENERGY SUBSTITUTES AS A SOLUTION TO THE PROBLEM

Alternative sources of energy fall into five categories, namely, gasification of coal, liquification of natural gas, processing of oil shale deposits, alcohol from starch bearing plants, and the manufacture of silicone oils and greases.

Since our coal reserves in the United States are great and capable of lasting us over 200 years at a two per cent annual yearly increase in production, we will probably adopt and modify the German, Fisher-Tropsch process of gasifying coal and the production of petroleum-like products. The Germans processed enough coal using this method to produce the necessary liquid fuels to fight this past war. The most outstanding feature of this process is its low cost.

The Illinois Institute of Technology has indicated that synthetic petroleum can be produced by processing the natural gases. According to the Institute, this process would be capable of producing over five per cent of our present petroleum needs. Plants have been started in Texas and Kansas to apply this method in the production of synthetic gasoline.

Oil bearing shale deposits are extensive and we recognize them as a great potential source of petroleum. The present known methods of extracting petroleum from oil shale produces a product of inferior quality to natural oil and at a higher cost. With additional research we should be able to improve the quality of the petroleum and reduce the cost.

The field of synthetic oil and grease production from silicate sand is a relatively new enterprise. This new class of synthetic is called silicones. Certain types of superior oils and greases can now be produced by this method. The future looks promising.

Starch producing plants can be utilized for the manufacture of alcohol of a quality suitable as a fuel. If starch producing plants are in plentiful supply and not needed for food we might find an important alternative source along these lines.

In addition to the direct alternative sources of energy we should not neglect to mention some of the substitutes, for example, extension of hydroelectric power production, atomic power, and the harnessing of solar energy, tides, volcanic energy and winds.

CONSERVATION MEASURES NECESSARY IN THE LONG RUN

Conservation is efficient use—not non use! There are many ways by which a more efficient use of resources, including fuels, could be put into practice. This would result in big savings in a plan looking to the future. Only a few will be mentioned.

In the methods of production there should be fewer oil wells per unit area, regulated drilling, horizontal and deeper drillings, use of water and gas to increase pressure, thus forcing a greater amount of oil from the sand, and increased efficiency in refining. Somewhat similar ideas could be used in the production of coal—even to the extent of gasifying it. Certainly the coal should be mined more completely before the mines are abandoned.

Likewise, there should be a more efficient use of the fuels themselves. The use of diesels rather than coal burning locomotives is an illustration. Engineers tell us that the diesel locomotive has an

efficiency of over 29 per cent as compared to approximately 7 per cent for the coal burners. Moreover, there are great quantities of gasoline spilled while filling tanks of the more than 30 million motor vehicles. In southern Illinois natural gas fires have been burning as a waste product in that oil field for the past 30 years. It may be that the pressure is too low in this field to pipe the gas long distances to be used as a fuel, but it could be forced back into the rock to increase the flow of oil instead of being burned as a waste. At a time when many people were uncomfortably cold, when industry was forced to shut down from lack of fuel, and when prices of fuels were skyrocketing in part, at least, from shortages of fuels, such wastes are criminal.

INCREASED PRODUCTION NECESSARY

It is common knowledge that exploration and drilling for petroleum in the United States was reduced during the war with the result that peacetime consumption has been running ahead of supply by some 100,000 barrels per day.

There seems to be general agreement that our actual reserves may be two or three times the proved reserves of twenty billion barrels. There are still opportunities to open up new wells thru deeper drilling, and thru the development of the oil pools within the continental shelf, that part of the continental platform which continues underneath the waters of the oceans and gulf to a depth of about 600 feet.

We must look more and more to foreign sources of oil. There are several large areas in the world in which most of the world's oil has been found. The areas referred to are the Eastern Mediterranean Basin, the Caribbean Basin, the Far East Basin, and the North Polar Basin. Incidentally, United States companies have interests in each of these areas.

The Caribbean Basin, comprising lands bordering the Gulf of Mexico and the Caribbean Sea, is the largest producing region outside of continental United States, with a proved reserve equal to that of the United States.

The islands of the East Indies lie within the Far Eastern Basin. While they rank rather low as oil producing nations, they have proved reserve of one billion barrels.

The North Polar Basin, where oil seeps have long been known, offers a challenge to petroleum geologists.

The Eastern Mediterranean Basin, made up of the lands around the Caspian Sea, the Red Sea, the Black Sea, and Persian Gulf, is the most significant world region from the point of view of petroleum potentialities. The proved reserves are enormous, some twenty-seven billion barrels. This figure, of course, excludes the U.S.S.R., since those reserves are unknown to outsiders. The Middle Eastern reserves are the largest reserves in the world. American companies have large concessions in Saudi Arabia, in fact, their concessions cover about half of the country. The Trans-Arabian Pipeline from Dhahrain, on the Persian Gulf, to Port Sidon, on the Eastern Mediterranean shore of Lebanon, has been held up due to controversial issues in the Middle East. The geographic significance of this oil to the United States is that once it starts flowing, it will ease the shortage in the United States and, at the same time, will prolong our reserves.

FUTURE PROSPECTS OF OUR FUEL SITUATION

The efficient use of resources, including fuels, would function more effectively in a long range plan but, for the immediate future, the fuel shortage is likely to become worse rather than better. We should, however, emphasize a more efficient use of all resources, including fuels, since prices will inevitably rise as resources approach depletion.

We have confidence that science will ultimately develop other sources of power before our fuels become exhausted, but in the meantime, we should use wisely those fuels that are now at our disposal.

"As steel goes, so goes the nation" is an axiom in our American economy. Therefore, the role of steel is a very important one in relation to our fuel crisis. With the increase in steel prices, it would seem that prices of steel for pipe lines and refining equipment might also go up in price. One can anticipate that manufacturers may be reluctant to expand fuel production, thus demand may exceed supply for some time yet, and perhaps two or three years may pass before the petroleum and natural gas industries have sufficient new equipment to keep pace with rising demand.

There are also some important political questions that relate to the fuel situation and its early solution. We must recognize that much of the future is related to Europe itself. When Europe gets

back on its feet, we can expect our exports to return to the prewar status.

It has already been indicated that we are going to find it necessary to look more to foreign sources for our petroleum needs. The Near East will be one of our more important sources. While American capital now controls much of the oil of the Near East, we must recognize the fact that this area is politically unstable. Production is being held back there not only because of lack of steel and machinery for production facilities but also by the political unrest in the area.

Several aspects relating to the future of the fuel question have been indicated and all factors lend themselves to the conclusion that we can be assured that, given time, industry and technological progress will solve the problem of the shortages.

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WIND DIRECTIONS—PUERTO RICO

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The text, air movement, is introduced, generally, to students of geography in grade schools as well as in colleges with a discussion of the Planetary or Earth's Wind Systems. A schematic representation labelled "As it might be" is prefaced with the statement that the earth's primary air circulation is complex and that the analysis might be simplified by proceeding from the simple to the less complicated forms. Hypothetical conditions, such as a non-rotating planet, a homogeneous surface, and vertical rays of the sun always

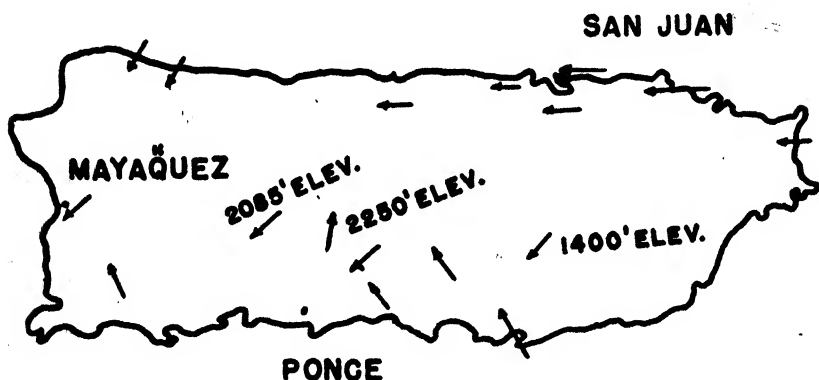


FIG. 1. Prevailing Annual Wind Directions, Puerto Rico.

at the equator, are presented on the assumption that the physics of air movement may be better understood on the basis of suppositions than thru an initial consideration of known realities.

In fact, the entire subject of Planetary Air Circulation warrants re-examination. Does it, the so-called General or Primary Air Circulation, constitute a background upon which all other air movements are superimposed? Is it any more primary than the Polar or Tropical Air Masses? Probably, the weakness is not in terms of the generally accepted fundamentals of the General Air Circulation but rather in the application of the Earth's Wind Systems. For example, a typical paragraph selected from a book in the field of geography includes in substance the statement "In the low latitudes, approximately 30° north and 30° south, between the dol-

drums and the belts of higher pressure, the Horse Latitudes, are found the Trade Winds, air moving from the high pressure areas toward the equator. As they move equatorward, they are deflected and become northeast trades in the Northern Hemisphere and southeast trades in the Southern Hemisphere." Obviously the above quotation is a gross generality when applied to most specific places and calls for considerable qualification.

Puerto Rico presents one of innumerable illustrations of the limitations of the application of the General Air Circulation. Figure 1, Prevailing Wind Directions in Puerto Rico, shows the annual dominance of east and northeast winds in northern Puerto Rico and southeast winds in the southern portion of the Island. The

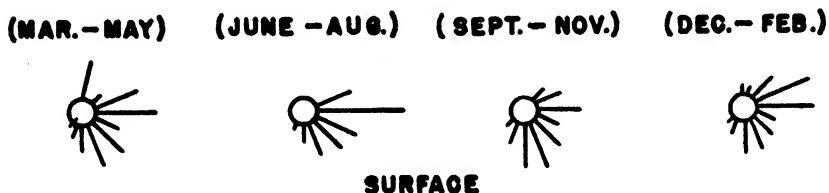


FIG. 2. Prevailing Seasonal Wind Directions, San Juan, Puerto Rico.

local controls, obviously, include location, insularity or distribution of land and water, landforms, and elevation. Further evidence is revealed in Figure 2, Wind Roses—San Juan, Puerto Rico, that the doctrine of prevalency of the average annual winds needs additional clarification. The diagrams portray the seasonal variations in surface wind directions. In general the wind at San Juan is predominantly from the east thruout the year. However, occasionally during the winter or low sun months northeast winds are active and may become the dominant winds in some months.

Another important fact is shown in Figure 3. During the period of the day, generally, from about 9 A.M. to 9 or 10 P.M. the air movement at San Juan is from the east, an on-shore wind, while the remainder of the twenty-four hour day, night and early morning, the wind is southeast or off-shore. Similar conditions prevail, generally, along the entire northern coastal region of Puerto Rico. On the south coast there is also a diurnal variation tending to bring about southeast winds by day and northeast winds at night. The velocity of the sea-winds is generally 8 to 16 mph., being twice as great as the land winds. Generally, the on-shore winds are

strongest in July and lightest in October. High winds are not common except in association with tropical disturbances or Hurricanes.

The changing patterns of wind directions in Puerto Rico, daily, seasonal, and annual, clearly indicate the significance of the local

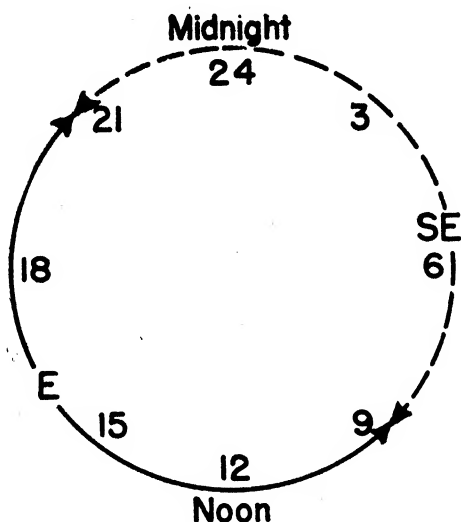


FIG. 3. Prevailing Daily Wind Directions, San Juan, Puerto Rico.

controls. On the basis of the Planetary Wind System, without a consideration of local disturbances, the erroneous assumption might be that the prevailing winds thruout Puerto Rico are north-east trades. Recommendation is, probably, in order to delete all references to the General Air Circulation where it is presented on the basis of suppositions. Is there any logical reason why the fundamentals of air movement cannot be clarified in terms of known realities?

JOURNAL OF GEOGRAPHY PRIZES

In January, 1947, we had the pleasure of announcing a series of prizes, to be awarded to contributors of outstanding articles that have appeared in the *JOURNAL OF GEOGRAPHY*. These prizes are made possible by the generous contribution of one of America's eminent geographers who insists that he remain anonymous. He is convinced: 1) "That the fine service contributed over the years by the *editors* of the *JOURNAL* merits far more recognition than it has received. These prizes honor them. 2) That the receipt of the prizes by the authors of the articles judged best will encourage these authors and other authors, with the result that additional excellent manuscripts will be offered for publication in the *JOURNAL*. 3) That public recognition of worthy achievement will help not only those who receive the recognition but also those who participate in any way. Indeed the public will think better of geography and of the *JOURNAL* when it learns of these prizes." Under the terms of the gift the President of the National Council of Geography Teachers is directed to appoint committees to make the award. The President is *ex officio* a member of each committee. Eight awards have now been established in honor of the following: Richard E. Dodge, Ray H. Whitbeck, George J. Miller, J. Paul Goode, Almon E. Parkins, Ellsworth Huntington, Isaiah Bowman, and Cora P. Sletten.

ALMON E. PARKINS PRIZE, 1948

Dr. Parkins was an associate editor of the *JOURNAL* for many years, past president of the National Council of Geography Teachers, author of elementary textbooks, and joint editor of "Our Natural Resources and Their Conservation." The prize in his honor is for an article published in the *JOURNAL* within the last decade on the subject of conservation, or some study of the South. The prize was awarded, at the recent Chicago meeting of the National Council, to Dr. J. R. Whitaker for his article on "International Aspects of Conservation," which appeared in April, 1944. The judges were Dr. E. E. Lackey, Dr. Douglas C. Ridgley, Dr. Earl Shaw, Dr. Loyal Durand, and Dr. Thomas F. Barton.

ELSWORTH HUNTINGTON PRIZE, 1948

Dr. Huntington's contributions to the advancement of geographic education are legion. Like Dr. Parkins he received the Distinguished Service Award of the National Council and served as president of the Association of American Geographers, and he was a frequent contributor to the *JOURNAL*. The prize in his honor is for an article or series of articles on Eurasia, or on climate, and published in the *JOURNAL* within the last decade. The prize was awarded to M. Melvina Svec, at the recent Chicago meeting, for her series of articles on Eurasia. The judges were Erna Grassmuck Gilland, Dr. J. R. Whitaker, Dr. Earl Shaw, Dr. Loyal Durand, and Dr. Thomas F. Barton.

PRIZES FOR 1949

Two prizes will be awarded in 1949 for outstanding articles published in the last five years in the *JOURNAL*. The Isaiah Bowman Prize is to be for a paper dealing with political geography, South America, or Pioneer Regions. The Cora P. Sletten Prize is for a paper by a woman, or for three or more reviews by the same author. Dr. Bowman was editor of the *JOURNAL* for two years; Miss Sletten was assistant editor for twenty-three years.

The staff of the *JOURNAL* wishes to again take this opportunity to express its great appreciation of the generous gift which has made the awarding of these prizes possible.

THE NATIONAL COUNCIL AT WORK

PREPARATION OF LISTS AND BIBLIOGRAPHIES ON STILL PICTURES

The Executive Board has approved the appointment of a committee to prepare lists and bibliographies on still pictures. The Planning Committee recommended "that a committee of three be appointed to prepare or have prepared material suited to publication in leaflet form about still pictures, including textbook pictures, mounted photographs, slidefilms, filmstrips, and slides. The series should be selected from the following topics or from others approved by the Executive Board: 1) a list of filmstrips of use in teaching the geography of North America at the intermediate level 2) a bibliography of articles on the use of pictures in the teaching of geography."

Dr. Mary Jo Read, State Teachers College, Milwaukee, Wisconsin, is chairman, and Dr. Cyril L. Stout, Western Michigan College of Education, Kalamazoo, is secretary of this committee.

NEBRASKA CHAPTER OF N.C.G.T.

The October, 1948 Bulletin of the Nebraska Chapter of the National Council of Geography Teachers announces the following officers: President, Professor Dale E. Case, Nebraska Wesleyan University, Lincoln; Vice-President, Professor Richard Diffenderfer, State Teachers College, Kearney; Secretary-Treasurer, Miss Erma Warta, University Extension Division, Lincoln; Bulletin Editor, Professor Esther S. Anderson, University of Nebraska; and State Coordinator, Professor Nels A. Bengtson, University of Nebraska.

On October 30, the Nebraska Council had a geography luncheon at the Student Union. The theme of the program was "International Goodwill." Miss Patricia Rivera, Lexington, Nebraska, spoke on "Mexican Lands and Peoples," and Mr. Juergen Herbst, Exchange Student from the British Zone in Germany, spoke on "Present Conditions in Germany."

Interested persons may secure five issues of the Bulletin of the Nebraska Council of Geography Teachers by sending twenty-five cents to Miss Erma Warta, 1746 "Q" Street, Lincoln.

COMMITTEE ON COMPILATION OF SUGGESTIONS AND BIBLIOGRAPHY FOR USE BY CURRICULUM COMMITTEES

Miss Mamie L. Anderzhon, Oak Park High School, Oak Park, Illinois, is chairman of this new committee.

The Executive Board approved the appointment of this committee after the Planning Committee recommended "that a committee of three be appointed to prepare material designed to help curriculum committees. This committee is not to formulate or to recommend any one curriculum. It should: 1) prepare a bibliography of articles and other material; 2) prepare or encourage the preparation of articles suitable for publication in the JOURNAL OF GEOGRAPHY covering topics not already adequately discussed in print; 3) compile definite suggestions for procedures to be followed by committees or individuals engaged in such work; 4) prepare a list of state coordinators or other persons trained in geography who are willing to assist such committees in their states in an advisory capacity or to help committees to locate other such advisors; 5) prepare the material in the form most helpful to those who would use it and in accord with the plans of the planning and publications committees."

Miss Anderzhon's committee will start working on points one and four as soon as the entire committee is appointed.

THOMAS F. BARTON, *President*

SCALE THE HEIGHTS

<i>Peaks</i>	<i>Mts.</i>
— — — — —	9 — — — — —
— — — — —	8 — — — — —
— — — — —	7 — — — — —
— — — — —	6 — — — — —
— — — — —	5 — — — — —
— — — — —	4 — — — — —
— — — — —	3 — — — — —
— — — — —	2 — — — — —
— — — — —	1 — — — — —

Insert the proper names of peaks and mountains in the above diagram according to the following descriptions. Each name has as many letters as there are dashes in the line.

PEAKS

1. A volcanic peak near Mexico City.
2. Located in Tanganyika Territory.
3. Located in central Ecuador.
4. A peak in the Andes in western Argentina.
5. Highest peak in North America in Alaska.
6. Highest point in the U. S. about 80 miles from lowest point.
7. The mountain upon which Noah's Ark supposedly landed.
8. A peak in Washington near Canadian boundary.
9. An active volcano in Sicily.

MOUNTAINS

1. Principal mountains in eastern U. S.
2. Ranges along the western U. S. coast.
3. Mountains in northeastern New York.
4. Mountains said to form the "backbone" of Italy.
5. Mt. Everest, the highest peak in the world, is located in this great range.
6. A range extending into Oregon, Washington and British Columbia.
7. Mountains in Bulgaria.
8. Located in Morocco and Algeria.
9. Noted for platinum in eastern Russia.

RALPH S. HARRIS
Westport High School
Kansas City, Mo.

EDITORIAL NOTES AND NEWS

On March 29, 1948 Phi Chapter, Gamma Theta Upsilon, National Professional Geography Fraternity, was installed on the campus at Stanford University. Mr. John Taylor is the sponsor of the new chapter. Phi Chapter had a charter membership of twenty-six students and faculty.

Psi Chapter, Gamma Theta Upsilon is now organized and, with a charter membership of twenty-five students, was installed November 19, 1948, on the campus of the University of North Dakota. Mr. Bernt Lloyd Wills is the sponsor of Psi Chapter. Ina Cullom Robertson, National Secretary and Treasurer for Gamma Theta Upsilon, installed the chapter.

Dr. EARL E. LACKEY, who retired September 1, 1948, from the Department of Geography at the University of Nebraska is to join the staff of the Department of Geology-Geography of the University of Tennessee as visiting professor for the Winter Quarter of 1949.

The New Jersey Council of Geography Teachers held their annual meeting in Atlantic City, November 13, in connection with the New Jersey Education Association. Mr. LeRoy C. Hinkle, Dover High School, is president of the New Jersey Council, and Adelbert K. Bötts, New Jersey State Teachers College, Trenton, is State Coordinator. This year the New Jersey Council of Geography Teachers joined with the New Jersey Council for the Social Studies and the Association of New Jersey State Teachers Colleges to sponsor a forum on "Developing Zeal for Democracy Thru Geography, Citizenship Activities, and Current History." Dr. Thomas F. Barton, President of the National Council of Geography Teachers, spoke in behalf of geography's contribution.

Canada, our neighbor to the north, may gain a new province in the joining of Newfoundland to the Dominion of Canada. Negotiations now under way point to March 31, 1949, as Canada's date for making Newfoundland one of the family. When Canada accepts the new province Canada's area will be increased by one twenty-fourth, or 152,734 square miles. This figure includes the 110,000 square miles of Labrador. By accepting Newfoundland Canada will gain one of the world's greatest fishing grounds and a growing wood-pulp and paper industry. Newfoundland's position, the nearest North American land to Europe, gives Newfoundland war- and peace-time importance.

A great shift from the use of the steam engine to the Diesel locomotive has been observed since the war. More than 90 per cent of the new locomotives on order are Diesels. The answer for this recent shift lies in the Diesel's high efficiency. The conventional steam engine is about 7 per cent efficient, the steam turbine from 25 to 30 per cent efficient, and the Diesel from 33 to 37 per cent efficient. The cost of a Diesel is twice as much as a steam locomotive capable of hauling the same load at practically the same speed. The Diesel's savings in operation will equal its purchase price within six to eight years and frequently in far less time than that. In 1945 it was estimated that 75 per cent of all steam locomotives then in service were more than 22 years old. The life expectancy of a steam locomotive is said to be thirty years and constant overhauling and replacement of parts is necessary. So far the Diesels have required very little loss of time for repairs. Railroads will put into use the type of locomotive which will yield the greatest return for the capital invested. Some of the factors to be considered are: initial cost, frequency of repair and cost of operation, thermal efficiency of the fuel required, and adaptability to traffic demands.

GEOGRAPHICAL PUBLICATIONS

Cartocraft Geography School Atlas. U.S.A. Edition of Philips' Modern School Atlas, edited by George Goodall; xxii and 104 pp., index. 1947. \$4.00, 11½ x 9¼ inches. Distributed in the United States by Denoyer-Geppert Company, Chicago.

Denoyer's School Atlas with map reading suggestions. By L. Philip Denoyer. XXX and 32 pages, index. 1947. \$1.35, clothbound, \$2.40. 11 x 8½ inches. Denoyer-Geppert Company. Abridged Elementary Atlas \$0.60.

The Cartocraft atlas shows the high quality workmanship typical of Philips' atlases over a long period of years. The text covers briefly the problem of map projections and other map qualities. Graphs showing temperature, pressure, and rainfall data cover typical stations over the earth. Eleven pages show world maps, with the hemispheric and interrupted homolographic projections predominating. Thirty-six pages are devoted to the map portrayal of Europe and the British Isles, giving excellent coverage. Fourteen pages are assigned to Asia, covering adequately the important portions of the continent. The more important aspects of Africa are treated in nine pages, Australia and Latin America occupy seven each. North America, north of Mexico, is covered in seventeen atlas pages. The atlas gives slightly more weight to the British Isles and European areas than comparable American atlases, and correspondingly less space to the United States. The index is adequate.

Denoyer's School Atlas may be said to cover the minimum essentials required in an atlas for general school use. Thirty pages of textual material, much of which is beyond the understanding of the later elementary school student, appear excessive. The greater space is devoted to the United States and Canada, but coverage is given the remainder of the earth. The map plates are excellent, not obscured by too great detail, while the colors used are pleasing. The index is adequate, but carries no aids to pronunciation of place names.

L. H. HALVERSON

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Marquette, Michigan*

Joe Russell Whitaker. Geography in School and College. Bureau of Publications, George Peabody College for Teachers, Nashville, Tennessee. 1948. 116 pages.

After reading the 116 pages of this book, one admires the ingenuity of the author in his ability to include so much pertinent and timely material in so small a volume.

The book is a compilation of twelve papers which were written over a period of fifteen years. Despite this fact, there runs thruout the essays one main theme—geography in education—a theme which provides a remarkable degree of unity and coherence.

The organization of the book facilitates its reading and presents a coherent idea thruout its length. The well organized topics follow each other logically and leave the reader with the conviction that the author is a master of his subject and sincere in his convictions. Thruout the twelve chapters the need for broader world understanding and closer cooperation among nations is stressed repeatedly. The earth is today so completely occupied that an individual needs to consider himself a citizen, not only of his own country, but of the world as a whole. Examples, worldwide in scope, are presented in proof of the need for world interdependence and for a broader global understanding. Geography teachers, because of their association with and knowledge of world affairs,

are in a position to perform many services in educating people to global understanding. In this respect, geography provides a necessary worldwide framework of knowledge. It also helps us to understand how people are bound together and the ways by which nations are forced to take account of each other. Furthermore, geography provides a basis whereby an understanding and appreciation of the problems of other people may be secured.

However valid the above factors may be, their significance is lost without purposeful teaching. Numerous examples are cited to emphasize the danger of careless methods and thoughtless actions on the part of the teacher.

For those who desire to learn of the methods of purposeful teaching the last five chapters of the book offer valuable directions. Problems dealing with: "Change," "Where Places Are," "What Other Lands Are Like," "New Courses in Geography" and "Geographic Materials" are only some of the topics discussed.

The final paper deals with "The College Teacher's Search." Search for what? Among the more significant objectives stated are: valuable subject matter, the student's needs, ways by which students and subject matter may be brought together. Such objectives emphasize that the earnest college teacher's search is never ended.

The lack of an index is to be regretted because this little volume is packed with useful aids. Teachers of geography and closely related fields, as well as school administrators and supervisors and students, will find the book worthy of frequent reference.

G. DAVID KOCH

Indiana State Teachers College, Terre Haute

Leonard O. Packard, Bruce Overton and Ben D. Wood. **Geography of the World.** 488 pp., photographs, maps and diagrams. 1948. The Macmillan Company, New York. \$4.00.

This text is the successor to *Our Air Age World*, and aims to acquaint the high school student with world geography and post war problems. The material is presented in Ten Parts, each Part divided into Units. Part One presents briefly such topics as rotation, revolution, latitude, longitude, time, seasons, weather, climate, winds, land and waters, maps and mapping, earth resources, etc. Following this general introduction, the world is presented continent by continent. More pages are devoted to the presentation of the United States than to any other political area. In all other instances, nations are handled very briefly.

The text is well illustrated with many new photographs, maps and diagrams. A series of political-physical maps of the continents appears in the Appendix, together with rainfall maps of the continents and the United States. Maps are distributed thruout the text. Many of these could be improved; for example, the series indicating the world distribution of minerals, and the maps showing United States airlines and railroad lines. In the discussion of the iron and steel industry of the United States there is need for distributive maps of the coal and iron ore resources.

The text presents many facts. It covers the earth but develops little appreciation of regional interdependence. The high school student needs much guidance in the use of facts.

VILLA B. SMITH

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